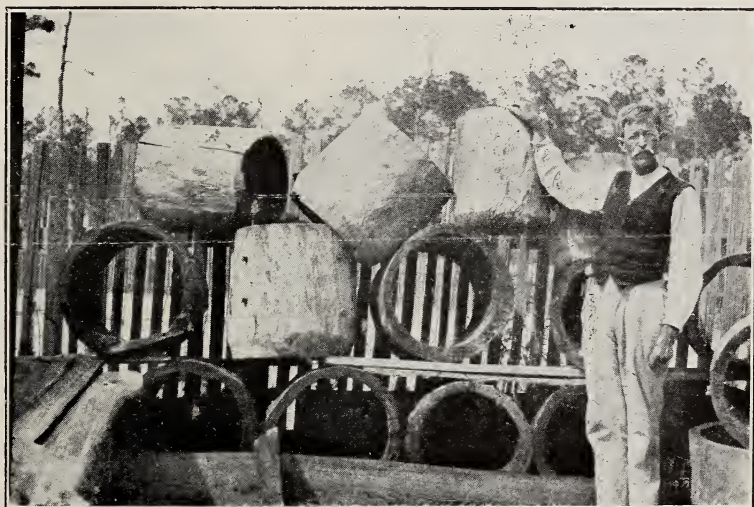


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# Gleanings in Bee Culture



*The Passing of the Log Gum in the South.*

VOL. XLIX

March, 1921

NUMBER 3

## QUEENS and BEES WHEN YOU WANT THEM

We are establishing one of the most modern Queen-rearing outfits in the United States, and will breed from New Imported Italian Blood. We are not going to tell you how many Queens we will put on the market, as we shall produce **QUALITY** instead of **QUANTITY**.

A limited number of orders for spring delivery will be accepted at the following prices:

Quantity	1	6	12	24
Untested . . .	\$2.00	\$11.40	\$21.60	\$40.80
Sel. Untested . .	2.25	12.80	24.30	45.90

We are also prepared to furnish full colonies, nuclei, and pound packages for spring delivery. Write today for prices.

**THE A. I. ROOT COMPANY**  
**OF TEXAS**  
P. O. Box 765, SAN ANTONIO, TEX.

Send in a list of your requirements today and get our special prices on all supplies.



**Miller**  
**Box Manufacturing**  
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## Boyer's "Quality-First" Tin Honey and Syrup Containers

are the best and cheapest in the long run. Prompt shipments of all standard sizes and styles. Can manufacturers since 1892. Large capacity. If you cannot secure them from your usual supply house, write us your needs.

**W. W. Boyer & Co., Inc.**

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## The New Buckeye Extractor

We have a carload of extractors on the way here from our Eastern factory. As the new Buckeye continuous automatic reversing extractors in this car will be snapped up quickly, anyone desiring one of these machines should place their orders at once.

Write for particulars regarding any style of extractor. We will have a complete assortment when this shipment arrives.

**The A. I. Root Company of California**  
Los Angeles: 1824 E. 15th St. San Francisco: 52-54 Main St.





# CONTENTS

## MARCH, 1921

Honey Markets .....	132-133
Editorials .....	137-138
Grading the Combs.....Morley Pettit	139-140
Transferring in the South.....E. R. Root	140-143
Paint for Beehives.....A. N. Clark	143-144
Workers for the Honey Flow.....H. F. Wilson	145-146
Beekeeping in Foreign Lands.....W. B. Schrels	146-148
Comb Honey Production.....Geo. S. Demuth	148-149
National Honey Advertising.....Truxton V. Damon	150
Color of Drones.....E. P. Stiles	150-151
Concrete Hive-stands.....W. A. Chrysler	151-152
Washboard Actions of Bees.....Allen Latham	152-153
Local Honey Advertising.....C. W. Aeppler	153
Siftings.....J. E. Crane	154
Our Food Page.....Constance Root Boyden	155-156
Beekeeping as a Sideline.....Grace Allen	157-158
From North, East, West, and South.....	159-161
Heads of Grain from Different Fields.....	162-163
Gleaned by Asking.....Editors	164-165
Talks to Beginners.....Editor	166-167
Bees, Men, and Things.....	168
Just News .....	169
Notes of Travel.....A. I. Root	170
Our Homes .....	170-171

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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M'n'g Editor

## Muth's Ideal Veil, \$1.50



MEET GUY LE STOURGEON, SAN ANTONIO, TEXAS, the president of the American Honey Producers' League. He's a real man, fighting for a real League, wearing a real Bee Veil.

WE HAVE A STOCK OF LEWIS Beeware waiting for your orders. Send us a list of your requirements, and we will quote you attractive prices on quality goods. Write for our catalog.

SEND US A SAMPLE OF YOUR honey and name your most attractive price delivered to Cincinnati. We pay you the day shipment is received.

WAX, OLD COMBS. We pay you the highest market price for rendered wax, less 5c per pound, rendering charges. Our rendering process saves the last drop of wax for you. Write for shipping tags.

BEEES—TWO FRAME NUCLEI, with queen, \$8.50. Order them early.

## The Fred W. Muth Co.

Pearl and Walnut Sts.  
CINCINNATI, O.

## FOUNDATION MILLS TURNING

And we are making that famous product, THE NEW PROCESS AIRCO FOUNDATION, on our own machines, here at Council Bluffs. Let us send you a sample, for we believe it is absolutely the last word in foundation. Severest tests will convince you that you cannot afford to be without AIRCO in your own yard. It pays—that's the big point about it! If you are in the habit of having your wax worked into foundation, send for our terms and prices. Let us quote, too, on your season's needs in foundation, for we believe that we can interest you. Use AIRCO, it pays.

THE A. I. ROOT CO. OF IOWA, Council Bluffs, Iowa

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Yes, we are ready for the rush. Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

"Everything in Bee Supplies"

## SUPERIOR HONEY COMPANY

OGDEN, UTAH.

(Manufacturers of Weed Process Foundation)



# BEE SUPPLIES

## Root's Goods at Factory Prices With Weber's Service

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied; give us a trial and we will show you how quickly we will answer your correspondence; send your order and it will follow 24 hours after we receive it. Our new catalog will be ready about January 15th; send for same. We have thousands of satisfied customers; why not you? Send a list of your wants and we will quote you.

**C. H. W. Weber & Co.**

2163-65-67 Central Ave., Cincinnati, Ohio.

### TINS AND GLASS JARS

Down in Cost--Order Now for Next Crop Packing.  
Note Low Prices Subject to Change at Any Date

#### 2 1/2-lb. Cans.

2 dozen reshipping cases.....\$1.45 per case net  
In 100-can crates.....\$6.50 per crate net  
In 200-can crates.....\$11.00 per crate net  
In 500-can crates.....\$24.50 per crate net

#### 5-lb. Pails with Handles:

1 Doz. reshipg. cases.....\$1.35 per case net  
In Crates of 100.....\$8.30 per crate net  
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#### 10-lb. Pails with Handles.

In 1/2 Doz. cases.....\$1.10 per case net  
In crates of 50.....\$6.70 per crate net  
In crates of 100.....\$12.75 per crate net  
5-Gal. tins, used, good condition, 2 to case.....50c per case  
5-Gal. tins, NEW, 2 tins to wood case....  
.....\$1.35 per case

#### WHITE FLINT GLASS, WITH GOLD LACQD. WAX-LINED CAPS.

8-oz. Honey Capacity, Cylinder style.....\$1.50 carton of 3 doz.  
16-oz. Honey Capacity, Table Jar style.....\$1.40 carton of 2 doz.  
Quart or 3-lb. Honey Capacity, Mason Style.....\$1.00 carton of 1 doz.

**HOFFMAN & HAUCK, INC.**

**Woodhaven, New York**

## SEND TO INDIANAPOLIS FOR YOUR BEEKEEPER'S SUPPLIES

Our stock is new and complete and we are prepared to give the best of service. Send for 1921 catalog. They will be out soon after the first of the year. Gleanings subscriptions also taken.

**THE A. I. ROOT COMPANY, 873 MASS. AVE., INDIANAPOLIS, IND.**

## HONEY MARKETS

The situation is just about as it has been—neither better nor worse. When the buyers' strike is over (and it can not last much longer) we may expect a much better demand for honey as well as all other commodities. We would advise beekeepers not to ship to the big markets, but dispose of their honey locally as far as possible. Some beekeepers have done well in selling in five and ten pound pails. They have disposed of their crops and have helped to advertise the value of honey as a food in their own locality. What some have done others may do.

### U. S. Government Market Reports.

#### SHIPPING POINT INFORMATION.

**SOUTHERN CALIFORNIA, LOS ANGELES.**—Wire inquiry light, general market conditions very unsettled, with lower prices and weak tone, still lower prices expected by many. Eastern buyers reluctant to order solid carloads, and mostly cars are consigned to be sold in small lots by brokers in the large markets. Independent shippers hesitate to ship unsold, due to uncertain conditions in consuming centers. Nominal quotations f. o. b. usual terms, per lb.: White orange blossom 14-15c, white sage 12-14c, light amber sage 10-12c, white alfalfa 10-11c, light amber alfalfa 7-8c, white Hawaiian 8c, light amber Hawaiian 6c. Beeswax, sacked in less than carlots, 33-35c per lb. No comb honey will be available until new crop comes on in September.

**INTER-MOUNTAIN REGION (COLORADO AND IDAHO).**—Extracted honey moving slowly in less than carlots, and little comb being shipped. Comb honey is being offered around \$6.75 per 24-section case in large lots, and extracted sweet clover and alfalfa at 10-11c per lb. Shipments are only a small fraction of last year's and a large holdover is expected, as beekeepers refuse to sell at prevailing prices. Some organizations are endeavoring to dispose of their stock by sales direct to the consumer.

**OTHER SECTIONS.**—In the Catskill Mountain district it is reported that less than 10 per cent of the crop remains in hands of the beekeepers, altho in the central portion of New York State the proportion is said to be somewhat larger. Most sales at this time are made direct to the consumer in glass jars and small pails. Wisconsin clover is said to be still held for 18c per lb. Western white sweet clover and light amber alfalfa is generally quoted around 10-11c per lb., f. o. b. shipping points.

#### TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

**BOSTON.**—1 car Porto Rico arrived since last report. Comb honey in light demand but steady. Porto Rico honey in good demand and practically cleaned up. Almost no demand for other extracted honey on account of low prices for Porto Rico stock. Comb: Sales to retailers, New York, 24-section cases white clover No. 1, heavy, \$8.50-9.00; light, \$7.00-8.00; Vermont, 20-section cases white clover No. 1 heavy, \$8.50; light, \$7.50. Extracted: Sales to confectioners and bottlers, Porto Rico, amber per gal., 80-85c; California, white sage, very few sales 18c. Beeswax: Few sales of foreign wax and almost none of light domestic. Inquiry is mostly for cheap waxes. Sales to floor wax, candle and shoe polish manufacturers, domestic light, 32-35c; African, dark, 17-20c.

**CHICAGO.**—No carlot arrivals since last report. Supplies liberal, movement very slow, due apparently to mild weather and easier sugar situation. Market tone very weak and most sales in small lots, most stock now arriving on commission. Extracted: Per lb., sales to bottlers, Iowa, Montana, California, white alfalfa and sweet clover mixed, 14-14½c; light amber alfalfa and sweet clover mixed 13c. Comb: Sales to retailers, Colorado, Montana, Minnesota, 24-section cases alfalfa and clover, heavy \$6.50-6.75; light and leaky, \$4.50-5.50. Beeswax: Receipts since last report approximate 1 car from Oklahoma, Texas, South America, and Africa. Market very weak and movement draggy. Foreign wax injuring market. Sales to wholesale druggists and harnessmakers, Oklahoma and Texas light, 30c; dark, 26-28c. Imported, dark, 25-26c.

**CINCINNATI.**—No carlot arrivals since January 31. Light 1 c. l. receipts. Demand and movement poor, market unsettled. No record of sales available.

**CLEVELAND.**—No arrivals since last report. Little interest being shown, demand being mostly from retail trade for bottle or package goods. Extracted: Quotations to bakers, 60-lb. cans small lots western white sweet clover, 16½ to 20c per lb.

**DENVER.**—Arrivals light, demand slow, movement very light. Sales to jobbers, extracted: Colorado, white, 13c; light amber, 12½c; amber, 12c.

**KANSAS CITY.**—1 car California, 1 car Oregon arrived since last report. Supplies liberal, demand and movement slow, few sales, market weaker on both comb and extracted, prices slightly lower. Sales to jobbers, extracted: California, light amber alfalfa, 14-15c per lb. Comb: California, 24-section flat cases light amber alfalfa, No. 1, \$6.00-6.50.

**MINNEAPOLIS.**—No carlot arrivals. Quotations direct to retailers, supplies moderate, demand and movement slow, market weak, season practically over. Trade showing very little interest in carlots and would be difficult to move another car even with marked drop in price. California and Minnesota white clover, 17-18c; western, dark amber offered low as 12c. Comb: Supplies light, demand and movement slow, market dull. Western, cases 24-section No. 1, alfalfa and sweet clover mixed, \$8.00.

**NEW YORK.**—1 c. l. receipts from New York moderate, from California light. Demand and movement very light, market dull; bottlers, confectioners and bakers doing practically all the buying; most sales are on South American and West Indian stock, as California honey is still considered too high. Sales to jobbers, large wholesale grocers, confectioners, bakers and bottlers. Extracted: Domestic per lb., California, light amber alfalfa and white alfalfa, prices slightly higher 12-13c; few, 13½c; white orange blossom and white sage, 15-16c, few 17c. New York, sweet clover, 14-15c; few 16c; buckwheat, 12-13c; imported, West Indian and South American, refined, 5½-6c; few high as 7c per lb.; best, 60-65c; some low as 50c per gallon. Comb: No sales reported. Beeswax: New York and foreign 1 c. l. receipts moderate. Supplies moderate, demand and movement slow, market dull, most sales being made to manufacturers and bleachers. Sales to jobbers, wholesalers, and manufacturers, South American, West Indian and European, light, best, 26-28c; slightly darker stock, 20-25c; dark, 18-20c; New York light, best, 28-30c.

**PHILADELPHIA.**—No arrivals. No sales or purchases being made of either comb or extracted the past two weeks. Beeswax: Supplies liberal. Slight improvement in inquiry noticeable, but very little business being transacted. Sales to manufacturers, South American and European, red, 18c.

**ST. LOUIS.**—Comb: Very light receipts reported. Supplies moderate but adequate. Movement very limited and confined entirely to sales in small lots to retailers. Market shows no activity and is weaker. Sales to retailers, Colorado, 24-section cases, white clover and alfalfa No. 1, heavy, mostly around \$7.00. Extracted: Very light receipts reported. Supplies liberal and adequate, practically no demand or movement, market very unstable and weaker. Sales in small quantities to retailers in 5-gallon cans, per lb., Missouri, Arkansas and Mississippi, light amber various mixed flavors, 12-14c; California, light amber alfalfa, 10-12c. Beeswax: Receipts and supplies light. Practically no movement, market weaker, few sales in small lots to jobbers and manufacturers of floor wax and comb foundations. Missouri, Arkansas, and Mississippi, light, 23½c.

GEORGE LIVINGSTON,  
Chief of Bureau of Markets.

### Opinions of Producers.

Early in February we sent to actual honey-producers in California and the South the following questions:

1. What is the amount of brood and bees in the hives as compared with normal?
2. Is the amount of stores in the hives sufficient to carry the colonies thru to the main honey flow?
3. What is the condition of the early nectar and pollen plants?



4. What is the condition of the soil for the later main honey plants?

Answers, as condensed by the editor, are as follows:

**ALABAMA.**—More brood than usual at this time. Bees have consumed more stores than usual on account of warm weather. Plants looking fine. Prospects are as good as I have ever seen.—J. M. Cutts.

**CALIFORNIA.**—Amount of brood and bees normal. Stores not sufficient. Condition of plants good. Not enough moisture in soil.—L. L. Andrews.

**CALIFORNIA.**—From one to four combs of brood and bees. Plants in good condition. Soil needs more rain to insure crop.—M. H. Mendleson.

**CALIFORNIA.**—Brood and bees as good as usual. Plenty of honey in most apiaries. Plants normal. Soil in good condition, but will need more rain later.—Geo. B. Farinan.

**FLORIDA.**—Amount of brood and bees normal. Stores sufficient. Condition of plants good. South Florida had a good rain lately.—Ward Lamkin.

**FLORIDA.**—Amount of brood and bees 15 to 20 per cent above normal. Stores sufficient. Condition of plants above normal, and of soil good.—C. H. Clute.

**LOUISIANA.**—Condition of brood and bees about 75 per cent. Stores are not sufficient. Condition of plants good, and of soil normal.—E. C. Davis.

**MISSISSIPPI.**—Amount of brood and bees 125 per cent. Stores not sufficient. Plants are in excellent condition, soil abnormally dry.—R. B. Wilson.

**TEXAS, EAST.**—Amount of brood and bees normal. Plenty of stores with favorable weather. Condition of plants normal, of soil 85 per cent.—T. A. Bowden.

**TEXAS.**—Small amount of brood, bees about normal. Plenty of stores. Soil in fine condition for mesquite.—J. N. Mayes.

**TEXAS.**—Amount of brood and bees 110 per cent. About 10 per cent of colonies will need feeding. Condition of plants good, soil too dry.—H. B. Parks.

#### Special Foreign Quotations.

**LIVERPOOL.**—Market continues slow with lower prices. Sellers are pressing their stocks at reduced prices, but without result. Buyers seem inclined to base their prices on pre-war prices. At today's rate of exchange the value of extracted honey is about 6 to 7 cents per pound. The beeswax market is much weaker. The value in American currency is about 20 to 21 cents per pound.

Liverpool, England, Feb. 2. Taylor & Co.

#### ROOT'S BEE SUPPLIES.

I can make immediate shipment for early orders, and you can get the discount by ordering early.

**A. M. MOORE, Zanesville, Ohio.**

22½ South 3rd St.

## Thagard's Italian Queens

Bred for quality. My three-banded queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting, and honey producers. Circulars free.

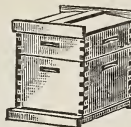
	1	6	12
Untested .....	\$2.00	\$8.00	\$15.00
Select Untested ....	2.25	10.00	18.00
Tested .....	3.00	16.00	28.00

**V. R. THAGARD**

Greenville, Alabama



## LISTEN BEEKEEPERS



We wish to tell the readers of Gleanings that the Bank of Perris has taken over about 500 hives of bees which we wish to sell as follows:

#### Nuclei Will Be Our Specialty.

One frame with queens, \$3.00; 2 frames and queen, \$5.00; one pound with queen, \$2.50; 2 pounds and queen, \$4.00; 8-frame Single-story colonies, \$10.00, F. O. B. Perris.

Young laying queens, \$1.50 each; \$8.00 for 6; \$15.00 per dozen; 50 to 100 or more, \$1.00 each.

We have a man in charge with long experience in bee-shiping. Let us book your orders with 10 per cent with same, balance when bees are wanted. Ask for special prices on large order. Shipping season begins May 10th. Safe arrival and satisfaction.

Address

**BANK OF PERRIS**  
PERRIS, CALIF.

## Pure Italian Queens of the Best Known Strain

Booking orders now for spring delivery of two-frame nuclei, two-pound packages, and full colonies.

Prices	1	12
Untested .....	\$1.50	\$14.50
Tested .....	2.25	24.00
Select Tested..	3.00	30.00

Two-frame nuclei with untested queens, \$6.00; twenty-five or more, \$5.50.

Two-frame nuclei with tested queens, \$6.75; twenty-five or more, \$6.25.

Two-pound packages hybrid bees, each \$4.00; add price of queens wanted.

I have for sale fifty colonies black and hybrid bees in factory-made pine hives, eight-frame Langstroth dimensions, most combs drawn from wired foundation, shallow supers with frames included. Price f. o. b. Bagwell, Texas, \$8.50 per colony. Will sell in lots of five or all to one party.

No disease near here; health certificate with all I have for sale. Safe arrival and satisfaction guaranteed. Terms: One-fourth with order; balance due at shipping time.

**Baughn Stone**  
Manchester, Texas.



## MAKE THIS YEAR A COMB HONEY YEAR

---

Normal conditions are returning, and with them Comb Honey is receiving better proportionate returns than extracted. There is and will be an under-production of comb honey.

### TWO SUGGESTIONS

- 1st. Use comb-honey equipment you now have.
- 2nd. Get more equipment, and make it "Root quality."

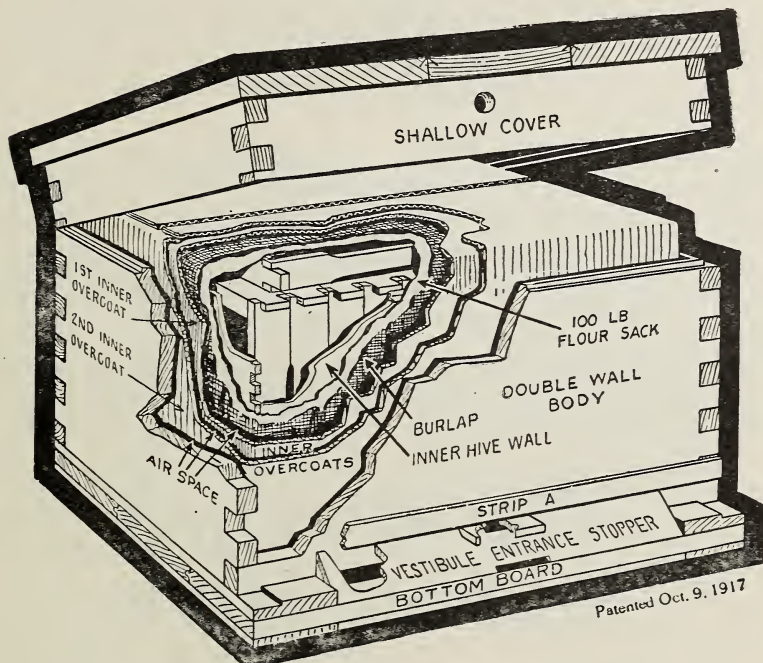
We would like to talk with you about the matter.

Write us regarding it, and also ask for our 1921 catalog.

WE ARE ALWAYS  
AT YOUR SERVICE

M. H. HUNT & SON  
510 North Cedar Street  
LANSING - MICHIGAN

## Winter Problem Solved by the Hive With an Inner Overcoat



*Furnished with Jumbo depth or Standard Hoffman Frames.*

In your purchase of hives for the coming season, consider the fact that, if well taken care of, they should last a lifetime. A lifetime matter is a serious one, and nothing but the best that money can buy should have your consideration. The Hive with an Inner Overcoat is the best on the market as to material, workmanship, and efficiency. The outside wall is made of  $\frac{7}{8}$  material, the best for the purpose. Any extra cost over ordinary hives, spread over its lifetime, is very low. The saving in bees, in a single winter, may more than pay for the entire investment. Winter losses in ordinary hives during the winter of 1919-20 in many cases were 75% or more. What a tremendous loss! The Hive with an Inner Overcoat will winter normal colonies, without loss.

Send for a special circular showing large illustrations. New 1921 illustrated catalog of beekeepers' supplies now ready. Send us a list of your requirements for the coming season.

### TIN HONEY PACKAGES

2 lb. Friction top cans, cases of 24.	5 lb. Friction top pails, cases of 12.
2 lb. Friction top cans, crates of 612.	5 lb. Friction top pails, crates of 100.
2½ lb. Friction top cans, cases of 24.	5 lb. Friction top pails, crates of 200.
2½ lb. Friction top cans, crates of 450.	10 lb. Friction top pails, cases of 6.
10 lb. Friction top pails, crates of 100.	

*Special prices on shipments direct from factory in the East or West.*

100 5-lb. Friction top pails.....	\$ 8.50	Pint Mason Jars, flint glass, per gross	\$9.00
200 5-lb. Friction top pails.....	16.00	Quart Mason Jars, flint glass, per gross	10.00
100 10-lb. Friction top pails.....	12.50		

A. G. WOODMAN COMPANY, Grand Rapids, Mich.

# The Large Hive

has proven to us through fifty years' experience its superiority. In fact we have yet to learn of a single beekeeper, once having used our larger hive, ever returning to the smaller one. Its use is convincing of its superiority.

**BEST WINTERING** because if properly handled it gives strong colonies in fall, with abundance of stores on few frames, immediately above and behind the brood-nest.

**BEST HONEY PRODUCING** because it gives large, strong colonies for the honey flow, and abundance of room for brood and honey. Shallow supers do away with queen-excluders.

**BEST NON-SWARMING** because there is ample laying room for the most prolific queen, ample storing room for the workers, and ample ventilation for all.

## The Modified Dadant Hive

has embodied in it all these advantages and lends itself readily to use with Langstroth equipment. Frames are Langstroth length, Quinby-Dadant depth, regular Hoffman style space  $1\frac{1}{2}$  inches from center to center. Hives regular dovetailed, metal cover and reversible bottom.

Try them and be convinced. Booklet for the asking. Ask for quotations on any size lot you want.

**DADANT'S FOUNDATION**—Every inch, every pound, every ton equal to any sample we have ever sent out. Specify it to your dealer. If he hasn't it, write us.

## Dadant & Sons

Hamilton, Illinois.

Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking.



# GLEANINGS IN BEE CULTURE

MARCH, 1921

## EDITORIAL

The annual meeting of the American Honey Producers' League was held at Indianapolis, Feb. 15, 16, and



### The A. H. P. L. Meeting.

17. Just as we go to press we learn that among the most important things done at this meeting was the making of plans for an advertising program involving the expenditure of \$6,000 for advertising honey as a food. This amount of money was pledged at this meeting by those in attendance. Further particulars will be given in these columns later as this advertising campaign develops.

Another matter of importance in the transactions at Indianapolis was the adoption of a resolution favoring a tariff of 48 cents per gallon on honey imported into the United States.

KEEN interest is manifested by beekeepers thruout the country in regard to providing a lasting memorial for the late Dr. C. C. Miller, as announced in our last issue.



### The Dr. Miller Memorial.

Some are already sending in their contributions for this purpose. As Gleanings understands it, the plans which are being made provide that a memorial fund is to be raised by popular subscription, the money to be sent on Dr. Miller's birthday, June 10, to designated receivers of subscriptions. It will be well for every beekeeper who desires to contribute to this fund to set aside the money for this purpose now, to be sure that it will be ready to send on June 10. Gleanings will announce the names of the designated receivers of these subscriptions as soon as the committee which has this in charge perfects its plans as to the handling of this fund.

THE Bureau of Markets has just issued a statement covering the calendar year 1920, showing the exports of honey from the United States and



### Honey Exports and Imports.

where this honey was sent, the data having been secured thru the Bureau of Foreign and Domestic Commerce. From this we learn that the total exports by months are as follows: January,

352,078 pounds; February, 335,656 pounds; March, 81,653 pounds; April, 56,835 pounds; May, 13,755 pounds; June, 28,258 pounds; July, 10,823 pounds; August, 27,498 pounds; September, 22,256 pounds; October, 152,530 pounds; November, 176,367 pounds; December, 282,016 pounds. The total for the year was 1,539,725 pounds.

The largest amount sent to any one country was 436,263 pounds, to the United Kingdom, most of this having been sent during January, February, and March. The Netherlands stands second as to the amount of honey received, the total being 321,078 pounds, most of which was sent during October, November, and December. The report also shows that 392,118 gallons of honey was imported into the United States during the last half of the year, most of this coming from Cuba and Hayti.

During the last five months of 1920, 113,804 pounds of beeswax was exported from the United States. During the same period a total of 1,028,430 pounds was imported.

DR. JOHN RENNIE, D.Sc., F.R.S.E., gave a paper on the Isle of Wight disease, at a



### The Isle of Wight Disease.

meeting of the Aberdeen Natural History and Antiquarian Society of Aberdeen, Scotland, on Jan. 21, in which he is reported to have stated that a number of samples of bees from other countries, including the United States, had been examined in his investigations; but in no case has the organism *Torsonemus Woodi*, the recently discovered cause of the Isle of Wight disease, been found in samples received from any other country. While this may make it appear doubtful that the discovery of this mite as the cause of the Isle of Wight disease will explain some of the mysteries connected with the adult bee diseases found in this country, such as paralysis, disappearing disease, etc., there is no telling at this time what a careful search for these mites in many samples of sick bees gathered in this country may reveal.

Detailed reports of the results of Dr. Rennie's investigations have so far not been published, owing to certain formalities.

MARCH is the most trying month for bees that are wintered in the cellar. If they are quiet at this time and show no indications of dysentery, they may be expected to come



### Bees Restless in Cellar.

thru in good condition. On the other hand, if they are noisy now at ordinary temperatures and spot their hives around the entrances they will continue to be restless and will waste their vitality faster and faster from now on until they can be put outside and relieve themselves by a cleansing flight. When bees become noisy in the cellar because the temperature is too high or too low or because of stagnant air in the cellar, the trouble can usually be remedied; but when they become restless because of accumulated feces, resulting from the consumption of honey which contains a considerable amount of indigestible matter, the only remedy is a good flight in the open air. Putting the bees out on a mild day for a cleansing flight and then returning them to the cellar has been tried as a remedy for this condition, but it is not practiced to any extent at the present time. When the trouble has gone so far that the bees spot their hives badly at this time it is already rather late to apply the remedy, since their vitality is usually so reduced and the bees so greatly aged that the colony will dwindle rapidly in the spring. If the bees are quiet at this time, a cleansing flight is unnecessary and they will fare better if left in the cellar until they can be put out to stay.



THOSE who winter their bees in cellars will anxiously watch the weather during



### When Should Bees Be Taken from Cellar?

the latter part of March for a suitable time to put the bees on their summer stands. It sometimes happens that the weather is too cold or too stormy the latter part of March, and the bees must be left inside until early April.

If the bees have wintered well and are quiet now, a difference of a week or two in the time they are put out may not make much difference to the bees; but it should be remembered that, unless they are wintering exceptionally well, a week's confinement in the cellar late in March or early in April may cause the bees to age more than a month or more last fall.

It was formerly thought that bees wintered in the cellar are less hardy when put out in the spring than those wintered outside and should, therefore, be left in the cellar until late in April, to protect them from the cold spells of early spring. This is true of colonies that have wintered poorly in the cellar, but this is probably because the bees have aged greatly from their restlessness in confinement rather than because of any lack of hardiness resulting from being in the cellar during the winter.

In fact, colonies that have wintered well

in the cellar should be better able to endure cold spells during early spring than those which have been exposed to the lower temperatures outside. The time-honored rule, to put the bees out when the soft maple begins to bloom, is probably as good as any. In the northern portion of the United States, well-wintered colonies, when set out in a sheltered location during the latter part of March or the first week in April, usually fare better than if left much later.



ANY THING that will cause the bees to rush madly from their hives in great numbers for their first flight



### Drifting in the Spring.

in the spring will cause drifting. In bad cases of drifting so many bees may return to a few hives that these colonies become abnormally strong, while other colonies lose so many of their bees that they are reduced to mere nuclei.

Colonies that are wintered outside are sometimes inclined to drift if the hives are too close together; but, if they have had frequent flights during the winter, they do not often cause trouble from drifting.

Bees that are put out of the cellar during the middle of a warm day, with entrances left wide open, will rush out in such great numbers in their eagerness for flight that they fail to mark their locations, and drifting is sure to follow, since in returning they are inclined to enter the hive having the greatest commotion at the entrance. Bees that have wintered poorly are usually more inclined to drift than bees that have wintered well.

Anything that tends to reduce the volume of flight on the first flight-day will reduce the tendency to drift. A thorough airing of the cellar, by leaving the doors wide open during a night or two just before the bees are to be taken out, causes them to be quieter while being carried out and afterwards to fly in a more nearly normal manner. Closing down the entrance to an inch or less in width before they begin to fly will prevent too many bees rushing out at once, thus helping to prevent drifting. Good wintering, a thorough airing of the cellar the night before, careful handling of the hives while carrying them out, and contracting the entrances immediately on placing the hives on their summer stands should prevent any trouble from drifting.

If the bees are put out at a time when it is too cold for them to fly and the entrances are contracted, they will usually take their first flight without drifting. When they have wintered well no apparent harm is done even if they are not able to fly for several days after being set out; but, if they have wintered poorly, this would be a dangerous procedure. By consulting the daily weather map, issued by the Weather Bureau, it should be possible to set the bees out the day before the arrival of the flight-day, which is a great advantage.



## GRADING THE COMBS

*Different Grades of Combs for Different Uses. Advantage of One Size of Frames for Brood-chambers and Supers*

By Morley Pettit

OF all the apparatus used in beekeeping the comb is the most important. Without it the honeybee colony could not exist. Its cells and surfaces form the base for all colony life. Here the young are reared, the food is stored, and the adults work or rest. Comb consists of hexagonal cells of various sizes and degrees of regularity. The cells are classified by shape and measurement. When measuring across the parallel sides of a row of cells those which are nearly regular and run more than four and a half cells to the inch will be used freely by the queen for worker eggs. Those which are four and a half to the inch and larger cannot be depended on to get anything but drones. Regular drone-cells measure about four to the inch. Cells which are distorted by transition from one size of regular cells to another or by the stretching of the foundation are seldom used by the queen. Pollen is stored only in regular worker-cells, honey in all kinds. This classification gives rise to the following names commonly used by beekeepers: Worker, drone, accommodation, and stretched cells.

The commercial beekeeper gets the bees to build their comb in frames for his convenience. From his standpoint "a comb" is the name given to the whole sheet of comb contained in any one frame. A frame may contain all the different types of comb, but for practical purposes it must be considered as a unit. "Combs," then, must be classified by the beekeeper according to their fitness for his different uses, and under a classification which is distinct from, tho based on, the one described above. In the Pettit Apiaries the grades are numbered with subdivisions.

### All Combs Sorted Into Four Grades.

No. 1 combs have all worker-cells above the middle, except at most two rows of malformed cells next the top-bar, and a few such cells scattered near the ends. In the lower half of the frame a total of 10 square inches of non-worker cells and open space is allowed. The foundation is straight in the middle of the frame. As we are often troubled with an excess of pollen, this has to be considered in grading combs. If a No. 1 comb contains pollen in more than 25 per cent of the cells, it is graded No. 1P and stored separately for special use. When a surplus of these accumulates the heaviest ones are graded No. 4 for rendering into wax.

No. 2 combs are built on full sheets of foundation which thru one accident or another have stretched or buckled so as to disqualify them for the No. 1 class. They have no more drone-comb or open space than No. 1 combs and must not contain

more than a very small percentage of pollen cells. Each comb in this class is given a conspicuous mark on the top-bar.

No. 3 combs contain drone-

comb in the upper half of the frame, or more than 10 square inches drone-comb and open space in the lower half; but are fairly light in color and weight and contain practically no pollen. They are an odd assortment, mostly built on starters and suitable only for extracting.

No. 4 combs are for rendering into wax—rejects from all other classes. In this class are the surplus pollen combs, the No. 1's which are very heavy with age, the No. 2's which are anyways black and heavy, the broken and very irregular ones.

### When the Sorting Is Done.

All combs not in brood-chambers are sorted annually. I might say all combs are sorted annually, as the sorting of combs in brood-chamber use proceeds whenever brood-chamber manipulations are being carried on. The practiced eye quickly spots a No. 2 comb in a brood-chamber where it has no right to be, by the rim of honey-clogged or unused cells below the top-bar. Where colonies have been supered properly the queen's failure to fill brood right up to the top-bar is the fault of either the comb or the queen. Lower-grade combs are marked as soon as detected in the brood-chamber and removed to the super either at once or later.

The sorting of surplus combs takes place at the annual round-up of supers during the milder weather of the inactive season. At this time the frames are scraped more or less thoroughly as time permits, and combs transferred to supers which are thoroughly scraped out inside. Having special marks on top-bars of grades simplifies the sorting greatly. Grading is done more or less rigidly according to the supply of combs of the most desired grades.

### Only Best Combs in Brood-Chamber.

For brood-chambers we must have No. 1 combs. In 10 combs grading high as to drone-comb or open space one with more drone-comb at the outside is allowable, altho our deep space below bottom-bars provides a safety valve for drone-rearing. Bees always prefer dark combs. I cannot recall an exception to this rule. Place both light and dark combs in a second brood-chamber, and the queen will occupy the dark ones first. In a super, honey will be stored in dark combs first invariably. Put back light and dark combs for cleaning up after the extractor, and the bees will collect the honey from the light combs and store it in the dark ones. Where no disease is present dark combs which are not heavy with age are considered more valuable than light ones for all purposes. We produce fancy extract-

ed honey for table use exclusively; we do not extract frequently to increase the crop at the expense of quality, but we do try to use the combs which the bees like best for all purposes.

We use a queen-excluder on every hive and prefer to use No. 1 dark combs in the supers, for reasons stated above. I mean the dark combs of light weight, not the old heavy ones which are on their way to the No. 4 class and the wax press. Since we have not enough No. 1 dark combs, we use next No. 1 light combs, then No. 2 combs, and finally, if driven to it, No. 3 combs. The main objection to combs of the third class is the fact that bees wishing to rear drones

will refuse to store honey in drone-cells until badly crowded. This is a distinct detriment to the morale of the colony at a very important point in the season. There is nothing in the No. 2 combs which presents this objection. In fact, I cannot see that No. 2 dark combs are any less desirable for honey storage than No. 1's.

This matter of being able to classify our combs for different uses is a **very important** advantage we have in using only one size of frame. Just how it is to be accomplished with Jumbos in the brood-chamber and something else in the super remains to be seen.

Georgetown, Ont.



IN our last issue, page 77,

I told how a bee-extension agent, C. L. Sams, of the Bureau of Entomology, Washington, D. C., and of the De-

partment of Agriculture, Raleigh, N. C., is rapidly changing the old order of things into new—box-hive beekeeping into modern methods and equipment.

Government officials have stated that there are more bees per square mile, or certainly more apiaries, in the southeastern part of the United States than anywhere

## TRANSFERRING IN THE SOUTH

*How an Expert Does It, and the Sure and Speedy Methods He Has Learned to Use*

By E. R. Root

ers are going south and buying up bees; but when they do so, of course they have to transfer. There are good as well as decidedly poor ways of

performing this operation. For the benefit of these and the old-timers in the Southland I shall try to show how an expert does it after having tried all the different ways. I refer, of course to C. L. Sams.

As I explained in our last issue, he usually announces that he will give a transferring demonstration at the home of some box-hive



Fig. 1.—Smoking the bees in the box hive preparatory to transferring. The box hive is first turned upside down, and then the smoking is begun.

else in the country, and I believe this is true. But most of these bees are in box-hives, handled by the haphazard, happy-go-lucky methods that yield only a small fraction of the honey that it would be possible to secure by modern methods. We in the North are apt to think that the gums of the older days are a thing of the past. A trip thru the South will convince one that they are very much in evidence.

Because of this many northern beekeep-

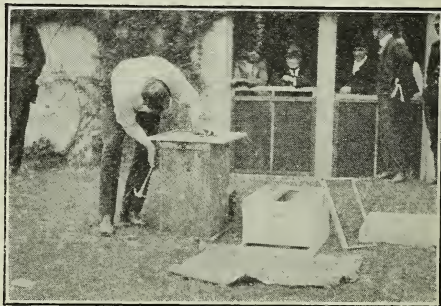


Fig. 2.—Drumming the bees out on to the super cover. This is done by a series of light blows kept up for three or four minutes on all four sides. The super cover or a board is much better than a box because it makes a tight fit.

man. Sometimes the neighbors will bring their box hives over to these demonstrations. To do this, Mr. Sams instructs them how to slip the gum into a burlap sack and tie up the top. On occasions of this kind he will transfer several colonies, showing how simple and easy the trick is, and some weeks later he shows how these same bees in "patent gums" will outstrip everything else in the yard in old gums ten times over.



I remember in particular how one old-time box-hive man told some two dozen other box-hivers who were present that his "patent gums" produced 150 pounds of honey each, and how he actually took all this honey without brimstoning and without getting a sting. That was an eye-opener.

#### How Sams Does It.

He selects a clear space on level ground, and asks the bystanders to form a circle

tent he drums still more, after which he carefully lifts it with its adhering bees. This he gently sets over the hive, so that the cluster comes in the open space between the frames as shown in Fig. 4. The center frames are, of course, removed before this is done.

If the drumming has been done properly, there will be left only a few bees clinging to the combs in the gum. Mr. Sams



Fig. 3.—Another method of removing bees from a gum by dumping them on the ground with one sharp bump. This is not so satisfactory as the drumming method shown in Fig. 2.

around it. In the center of this inclosure he places the box hives or gums to be transferred, and modern hives each containing five or six frames of foundation. He turns the box hive upside down, blows smoke into the bottom, which is now the top (see Fig. 1). He then takes the super-cover or inner cover of the modern hive and sets it over the gum. He begins a vigorous drumming



Fig. 5.—After the bees are drummed out, a common handsaw is altogether the best tool for cutting the combs away from the sides of the box.

formerly used a box into which to drum the bees; but he says it is not always easy to find one of the right size. Moreover, he claims the super-cover is just as good, if not better, and, what is of considerable importance, it is right at hand.

The next step is to get the old combs out of the gum or box hive, especially those containing brood. For that purpose Mr. Sams says a common handsaw in the case



Fig. 4.—After drumming, the bees crawl upward and cluster on the super cover. This is gently placed on the new hive, after which the operation of transferring the combs begins.

with a hammer—not heavy blows, but a series of light blows applied to all four sides of the old box or gum (see Fig. 2). This is kept up for perhaps three or four minutes. He next lifts the super cover slightly to see if the bees are clustering under it. If they have not come up yet to any ex-



Fig. 6.—In the case of the round gums or logs, it is necessary to use a keyhole or narrow saw, which is run clear around the inside of the log, cutting the cross-sticks.

of a box hive is altogether the best tool one can use (see Fig. 5). It is better than a knife, because it enables one to saw off the cross-sticks. A saw is better, also, because it cuts the combs better and cleaner than a knife, without breaking them.

When transferring from a round gum or

log he uses a narrow-bladed saw. A keyhole or pruning saw is very good. This is run clear around the inside of the gum, cutting off the cross-sticks at the same time (see Fig. 6). After the combs have been cut loose, the box or gum is lifted off the combs, leaving them standing. With a long-bladed knife it is now perfectly simple to take out

or gum is dumped in front of the entrance of the modern hive, when the work is complete.

Another plan, but one that is somewhat slower, is often used by Mr. Sams. A modern hive is prepared containing nine frames of foundation and a frame of brood from some other colony. This is placed on the

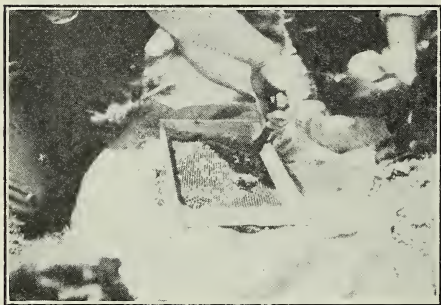


Fig. 7.—Only the combs containing the brood are fitted into brood-frames. A butcher-knife marks the size of the piece or pieces to be cut, and then the whole slice is cut large so as to fit snugly into the frame.

the pieces containing brood and fit them into the regular modern frames. All the other combs except those containing honey are dumped into a burlap sack. Those containing honey are retained by the family.

Perhaps nearly every one is familiar with the process of fitting pieces of comb into a frame. Only the squares containing brood are used. They are sliced up into sizes that will fit nicely together when the frame is

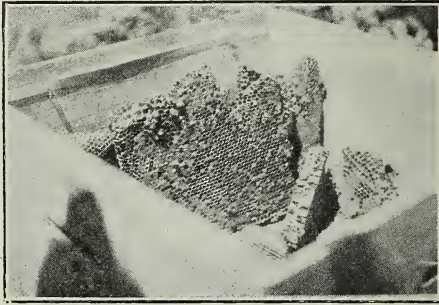


Fig. 9.—Sometimes one will find quite a large square of brood and fairly good combs in the old gum or box hive; but most of the brood comb in the box hives is irregular in shape, or contains too many drone-cells. Such as are here shown are better than the average.

stand occupied by the old hive or gum. On this is placed a bee-escape board with the escape feeding downward. The gum is turned upside down, when half of the bees are drummed up on to a super-cover or board, as before explained. In doing this it is important that the queen be secured. The bees with the queen are then dumped in front of the entrance of the new hive. If

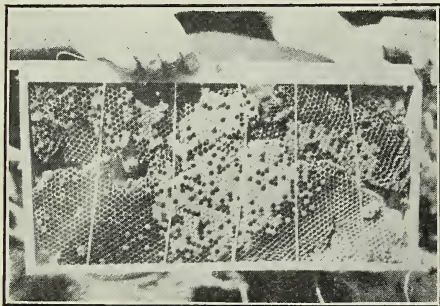


Fig. 8.—Where there are several pieces of comb it is necessary to use strings to hold them in place. These are wound around the frames several times and tied. The bees will remove the string.

laid over the whole and the size marked out with a knife as shown in Fig. 7. These squares are cut a little large, after which the frame is crowded over them. The last operation is to wind string around the frame as in Fig. 8, and tie. These frames of brood, as fast as they are made up, are then inserted in the space between the frames of foundation. Last of all, the box



Fig. 10.—This picture shows a longer way of transferring, but it avoids the necessity of cutting and fitting combs of brood into frames. The objections to the plan are the difficulty of getting the queen into the new hive and the length of time required to complete the transfer.

the queen goes in, all is well. The gum with the rest of its bees is now placed on top of the new hive with the bee-escape between. It is left that way for three weeks, when, if the queen was secured in the drumming, the brood will have emerged and most of the bees be below. The plan is shown in Fig. 10.



The objection to this plan, says Mr. Sams, is the duration of three weeks of time; and if this is at the beginning of the honey flow, an extra super beneath is required. There is also the difficulty of getting the queen with the bees. If the queen is left

closed, so that the bees must go downward in order to get outdoors. Of course all flying bees will be forced into the lower hive where they will have to stay when once down. The young bees will stay above to take care of the brood. After the brood have



Fig. 11.—A characteristic log-gum apiary. There are several rows of these gums that were transferred by Mr. Sams. This is not at all a rare sight in the Southland.



Fig. 12.—The same bees as shown in Fig. 11 after being transferred into modern hives. This is an apiary belonging to W. J. Martin. This apiary of 100 colonies, with the help of Mr. Sams, was easily transferred from the log gums in one week's time.

above, housekeeping is liable to start over again upstairs. It takes skill and experience to drum out the queen with half the bees.

It should be explained that the entrance to the gum when placed on the new hive is

all emerged, the remaining bees that have not gone down are removed by the drumming process. This plan obviates the necessity of cutting and fastening into frames patches of brood, and, where the conditions are right, is ideal.



AS paint materials of all kinds have been high in price for the past two years until quite recently, most beekeepers have put off painting.

Now that the wholesale price of linseed oil has dropped over 50 per cent, and the price of turpentine has dropped still more, besides a heavy drop in prices of lead and zinc, which are the principal raw materials entering into the manufacture of the best white paints, we should naturally expect to purchase good ready-mixed paints at half the price of a year ago. However, such is not the case, as manufacturers are on Jan. 1 holding up the wholesale price around \$3.50 per gallon and expect the retailer to pass along the high price to the consumer at around \$4.50 to \$5.00 per gallon retail.

On Jan. 1 raw linseed oil was quoted in New York at 80c per gallon wholesale, and turpentine at 75c. Both are cheaper than that now. The St. Louis market price of pig lead was down to \$4.50 per 100 pounds, and zinc at \$5.65. The present prices of raw materials would warrant a retail price of not to exceed \$3.00 per gallon for the very best

## PAINT FOR BEEHIVES

*Importance of Using Only High Grades of Paint. How to Interpret Formulas on Labels of Mixed Paint*

By A. N. Clark

mixed paints. About the only way to avoid paying tribute to paint profiteers would seem to be to mix your own paints out of such materials as you

can purchase at reasonable prices. If white lead and zinc white in paste form can not be purchased at a satisfactory price, the farmers' old reliable red-barn paint, made of a good quality of Venetian red, raw linseed oil, and turpentine, mixed by the user, is a very durable paint, and has good hiding power. It is very satisfactory on chaff hives and on single-wall hives that are fairly well shaded from the sun, but is too warm for sun-exposed hives. In ordinary times under ordinary circumstances it is the best economy to use the best white paint for single-wall hives.

### What Constitutes a Good Paint.

The requisites of a high-grade paint are: Durability, leaving a good surface for repainting, hiding power or opaqueness, spreading capacity, and failing only by gradual wear.

White lead has great hiding powers, but when used alone chalks off as dust. When



used with zinc white the combination is more durable than either lead or zinc alone. Zinc white used alone is apt to peel off. Raw linseed oil, as the vehicle of a paint mixture, leaves a good surface for repainting. Pure old process white lead to the extent of 65 per cent and good zinc white 35 per cent, mixed in pure raw linseed oil, plus a little turpentine drier, make a paint that fulfills all the above requisites of a good paint.

A hive painted with such a paint should not need repainting under five years if the first painting was well done, and will remain in pretty good condition for seven to ten years in most climates.

I would never use for outside painting a paint in which any present-known substitute for raw linseed oil is used, except in asphalt and tar paints. Asphalt makes a good coating for bottom-boards of hives. It can be applied by dipping in a kettle of hot melted asphalt, or can be melted and mixed with kerosene, or dissolved cold with gasoline, and brushed on. It also makes a good coating for sheet iron where the black color is not objectionable. Many corrugated-iron buildings are coated with asphalt paint.

Even a good paint may fail in durability if applied to damp, green, pitchy, or very cold lumber. Paint can not be properly spread in a cold atmosphere without undue thinning. Knots should be coated with shellac dissolved in denatured alcohol before applying paint.

In applying the priming coat to a pitchy lumber like hard pine, it is good practice to add considerable turpentine.

#### Poor Paint Dear at Any Price.

This will be a year in which beekeepers will be tempted to buy extremely poor-quality mixed paints, which may be offered at prices a little below the best. Many of these poor paints are dear at any price.

Some of the adulterants for linseed oil are soy-bean oil, corn oil, rosin oil, fish oils, coal oils, and benzol. None of them are good drying oils like linseed oil. By the word "drying," as applied to paint oils, we mean oxidation and not evaporation. Raw linseed oil absorbs over one-third of its weight of oxygen in drying.

Some of the "fillers" and adulterants used in white paints are calcium carbonate in some form, barytes, calcium sulphate, magnesium silicate, China clay, and powdered sand.

#### Read the Label on the Can.

Don't buy a mixed paint unless the label on the can contains the name of the manufacturer and the formula. Some state laws require this; so, if the manufacturer omits either, it is good evidence that he is not proud of his product.

Some people do not understand the meaning of paint formulae as printed on paint labels, so we give a few here with our criticism of the same:

Formula 1. Pigment: 65 per cent old pro-

cess white lead, 35 per cent zinc oxide. Vehicle; 93 per cent pure raw linseed oil, 7 per cent turpentine drier.

The above represents to my mind the best white paint for outside work.

Formula 2. Pigment: 66.6 per cent white lead (lead carb.), 33.4 per cent zinc white (zinc oxide). Vehicle: 84.8 per cent raw linseed oil, 5.7 per cent Japan drier, 9.5 per cent turpentine.

No. 2 is manufactured by an old paint company that takes pride in its reputation. It is a very good paint. Covers well and spreads well. Dries a little too fast for warm-weather work, as it contains a rather large amount of drier and turpentine.

Formula 3. Pigment: 25 per cent white lead (lead carb.), 20 per cent sublimed white lead (lead sulphate), 30 per cent zinc oxide, 10 per cent calcium carbonate, 15 per cent barium sulphate. Vehicle: 80 per cent raw linseed oil, 5 per cent turpentine, 5 per cent Japan drier, 7 per cent benzine, 3 per cent water.

No. 3 is probably somewhere near an average quality of mixed paint. It is neither very good nor very bad. The pigment contains some sublimed lead, which is not considered as good as lead carbonate. It also has 25 per cent of inert filler, as calcium carbonate and barium sulphate. The worst feature is the 7 per cent benzine and the 3 per cent water in the vehicle, used to adulterate the linseed oil.

Formula 4. Pigment: 36.6 per cent sublimed white lead, 12.2 per cent zinc oxide, 34.2 per cent calcium carbonate, 9.7 per cent barium sulphate, 7.3 per cent magnesium silicate. Vehicle: 87 per cent linseed oil, 6.8 per cent naphtha drier, 6.2 per cent naphtha.

No. 4 is made and sold by a general jobbing house. It contains no lead carbonate, only sublimed lead, and only a small amount of zinc oxide. Over half of the pigment is a cheap "filler," of which 34.2 per cent is calcium carbonate, or whiting. The vehicle contains too much naphtha. (Naphtha is cheaper than Japan drier and turpentine.) The paint lacks covering or hiding power—is too transparent. It also requires more gallons to cover a given surface, owing to lack of spreading capacity. No. 4 is manufacturer's analysis.

Formula 5. Pigment: 10 per cent sublimed white lead, 10 per cent China clay, 60 per cent barium sulphate, 10 per cent calcium carbonate, 10 per cent silica (sand). The vehicle is a mixture of linseed oil, soy-bean oil, naphtha drier, and water.

No. 5 represents a very poor paint. A large amount of barium sulphate was probably used to give it weight. It contains but little linseed oil and dries very slowly.

All ready-mixed paints require some thinning with raw linseed oil and turpentine for first coat.

Charlotte, Mich.

**B**EEKEEPERS in the North are soon to face the problem of getting the bees in shape for the 1921 honey crop. Very few beekeepers realize

the factor of success involved in just the right care of bees from March to June. They feel that if the bees come thru the winter successfully, they have done their best and that success or failure depends upon the season to follow. But what of the one or two beekeepers in the neighborhood who secure a part of a crop altho all others failed? Did the successful ones give the bees the needed care in the spring?

It is so easy to do and the results are so well known among practical beekeepers that it is sometimes hard to understand why 90 per cent of our beekeepers simply set the bees out-of-doors in the spring and leave them without protection and without sufficient stores to build up as best they can. It is my belief that protection and a superabundance of stores are fully as important in the spring as during the winter—and perhaps more so.

During the winter the temperature surrounding the cluster will be held at 57 degrees F. as long as the bees have stores and energy to live, regardless of the cold outside. During that time the temperature may go below the zero point for a short period at a time, but it will range mostly 20 degrees F. or higher. The bees are then required only to produce heat to raise the temperature 30 to 50 degrees F. In addition, they are not at that time required to use energy in the production of wax and food for the young.

#### Value of Spring Protection.

As soon as brood-rearing starts in the spring the temperature inside the cluster and around the young brood is increased to 93 to 95 degrees Fahrenheit. At the same time the outside temperature will in the North run about 30 degrees F., with fluctuations during March and April up to 65 degrees F. Under these conditions the bees are forced to produce energy which will keep the temperature up to that required for brood-rearing, a difference of 30 to 60 degrees. During that time an excess of energy is also being used in producing larval food, and possibly other products.

A practical illustration of how temperature influences the development of brood in the spring may be demonstrated by watching three types of colonies, those of minimum, medium, and maximum strength. By May the weak colony will have only a small circle of brood, indicating the inside space covered by the cluster. This will be more or less true also of the medium colony, but the area of the brood-nest will extend beyond

## WORKERS FOR THE HONEY FLOW

### *A Few Simple Requirements Which Greatly Increase the Strength of Colonies*

By H. F. Wilson

frames may be filled from end to end.

It is, of course, a recognized fact that strong colonies in the spring are able to build up strong for the honey flow, but how many beekeepers have ever carried on trials with protected and unprotected colonies with extra space for breeding and with more stores than seemed necessary? When a demonstration of this nature is carried on it is truly remarkable, and this is the principal reason why beekeepers who have tried packing the bees out-of-doors have reached the conclusion that outdoor packing is better than cellar wintering. However, the cellar wintering was not at fault, but the fact that the bees wintered out-of-doors had spring protection made it appear so. In the northern States the bees are often removed from the cellar and placed in exposed locations where the north and west winds sweep over them, causing a loss of heat which can only be made up by extra work on the part of the bees and a consequent loss of energy which should be conserved for a greater expansion of the brood-nest. Whenever a cold, wet spring occurs the bees have great difficulty in building up and always reach the honey flow in poor condition unless protected. The bees may be set out to advantage as soon as the snow is off the ground if they are given protection. There is considerable evidence to show that too much packing in the spring is detrimental as in heavy winter packing. If the packing is too heavy, the heat of the sun does not penetrate to the hive, and the bees do not come out and fly during the few days that are warm enough for a flight.

#### The Necessity of an Abundance of Stores.

Here in Wisconsin the month of April is always cold and the night temperatures frequently drop to near the freezing point. Perhaps there are only a few days when the bees can fly, and in that case we say that the bees being unable to gather pollen and nectar could not build up. This may be true in many cases, but it would not be the case if the beekeeper would only provide abundant stores. In truth, the bees do not need to fly more than three or four times during the latter part of March and April, and conditions without the hive have little or no effect on the development of the brood if conditions are right within.

#### Room Needed for Full Development.

Some of the beekeepers in Wisconsin who have been content with one hive-body full of bees at the beginning of the honey flow, have, during the past two years, been

the ordinary winter clustering space. In the strong colony the brood-nest will be several times larger than the winter clustering space and several



amazed to find that they could get two 10-frame hive-bodies full and from 12 to 17 frames with brood. Two beekeepers in late May, 1920, actually had two 10-frame hive-bodies with more bees than could get into the hive. No wonder some of our experienced beekeepers want large hives.

We do not put two hive-bodies on when the bees are first set out, but wait until six or eight frames contain brood when the second hive-body is placed on top. As soon as the queen lacks room below, she goes up, if the upper hive-body is packed and warm. In spite of evidence to the contrary, she will go down again when everything is filled above.

Our recommendations for the spring of 1921 are: First, arrange to set the bees in a location where they will positively be protected from the direct influence of the wind by providing some kind of windbreak. Second, if the largest possible colonies are desired at the beginning of the honey flow,

pack every colony with some outside covering or packing as soon as the bees are put on their summer stands. Third, see that every colony has more stores than you think it can use during April and May. If you do not have combs of honey feed sugar syrup and give 40-50 pounds because, as a rule, 10-20 pounds is about half enough. The strongest colonies will need from 75 to 100 pounds of stores to build up to the greatest possible strength, and, if they cannot get it in the field, the beekeeper must supply it. Fourth, let the bees have room for breeding. The beekeeper who has swarms in May should not be proud of the fact, for it is a sure sign of bad beekeeping. The fundamentals of spring care to get large colonies at the time of the honey flow are bees to begin with, protection during April and May, superabundance of stores, and not less than two hive-bodies for spring-rearing.

Madison, Wis.



## C O N D I - T I O N S for beekeeping

vary as much with locality in the tropics as they do in the temperate zones, and more so. Except for a few general rules and principles the beekeeper has to find out for himself what is best for his locality. Here on the west coast of Costa Rica we have an interrupted honey flow that lasts six to seven months, and we requeen all our colonies that have old queens or queens that have been laying over two months, with young queens that are just beginning to lay. Even then many queens fail with us before the honey flow terminates. This causes a great loss, as the strength of such colonies in the height of the honey flow dwindles quickly.

The bees instead of superseding the failing queen often just fill the brood-nest full of honey, the queen failing so quickly that the bees evidently do not become aware of her condition until no worker eggs are available from which to rear a queen. These colonies, with a brood-nest full of honey and few bees to defend it, are an attraction for robbers at the end of the honey flow, and a source of annoyance.

The average life of a queen here during the honey flow is about six months or perhaps a little less. Queens reared in the cooler higher altitudes live very little longer when brought here to the coast, while if left in the higher altitude where the honey flows are short they live up to three years and over.

There are no other bees of the European variety within many miles of my apiaries.

## BEEKEEPING IN FOREIGN LANDS

### *Interesting Facts About Apiculture in Happy Little Costa Rica*

By W. B. Schrels

The first year after I came here I had my apiary on a peninsula almost surrounded by the sea, and that year I lost about 60 per cent of my young queens in mating. Evidently they fell into the salt water, and about 40 per cent of those that did return proved either drone-layers or partly drone-layers. The second year I moved my bees on to the main land, and had very little loss in mating. The percentage of drone-layers also decreased some. This (the third) year the percentage of drone-layers has decreased still more.

#### Long Swarming Season.

Swarm control is also a vexatious problem with us. This year our bees swarmed for seven months, not more than one or two swarms a day, and very few colonies cast a second or after-swarm. Requeening with young queens reduces swarming some, and so does extracting. But you can not extract always in time; sometimes the supers are full of honey and you have to wait a week or two for it to ripen and the bees to cap it. To put on another empty super or to scatter the brood seems to hasten their swarming impulse. The size of a hive seems to make absolutely no difference in the amount of swarming here. We use the standard 10-frame L. size two and three-story hive. Usually when a colony swarms we cut out all the queen-cells and stubs and return the swarm to the old hive, and in nine cases out of ten they stay put.

#### The Honey Plants.

To name the best honey plants of this

locality would be very difficult. Providence was so kind and nature so lavish that a botanist would despair in trying to list and classify and find correct names for all of the nectar-secreting plants. I have been here three years, and each year our main honey crop came from a different source. Almonds, citrus fruits, a number of varieties of plums, tamarinds, aguacates, cocoanuts and many other varieties of palms, cotton, mesquite, catclaw, and many vine plants, both wild and ornamental, a great variety of tropical fruits, as well as nearly all the lumber woods, cedar, mahogany, cocobolas, mora, genisaro, espavel, balsa, and many others, also varieties of mint, sage, goldenrod, and wild sunflowers all produce honey. I have planted buckwheat and Russian sunflowers in the rainy season, and the bees worked busily on both. To pluck a flower from a tree or vine seldom causes it to stop secreting nectar. I have often noticed bees busily at work on the fallen flowers on the ground under a tree;

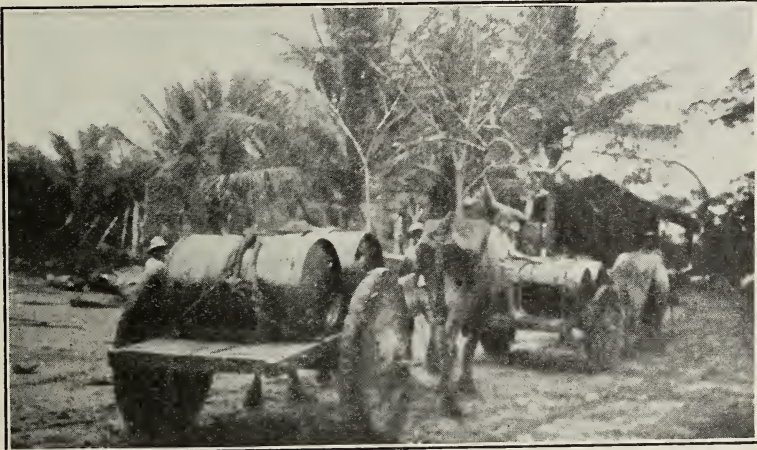
secured quite a little surplus in July from wild sunflower.

#### Critical Period for Bees.

October is the most critical time for the beekeeper in western Costa Rica. The bees then usually begin to rear brood heavily. Just before the dry season a wet spell sets in that lasts from 30 to 60 days, and very seldom do the bees get a flight of more than an hour. In this kind of weather they can gather neither honey nor pollen, and we have practiced feeding to great advantage the past two years during October. We have fed both white and dark brown sugar by making it into a thin syrup and pouring this into empty combs. The bees seemingly take one as readily as the other. I am satisfied that we materially increase our honey crop thru feeding at this time.

#### Many Varieties of Native Bees.

There are many kinds of native bees in this locality, both the stinging and stingless varieties. Some build wax combs; others, half wax and part woody fiber; still others



Hauling drums (iron casks) of honey on ox carts to a boat landing in Costa Rica.

and just the other day a young lady pinned some orange blossoms on, and some time afterwards two bees came and seemingly got honey out of the blossoms.

There are five or six varieties of mangrove, some of which bloom for six months, and the bees get considerable honey from them at times. Some times of the year there seems to be a dearth of pollen, and we have planted corn and kaffir corn to produce pollen at these periods.

Our honey flow begins with the dry season, and we seldom have a shower of rain for six months or over. This gives us ideal extracting weather. With the first rain in April or May the flow decreases, and the honey gets slightly thinner and darker in color, and after the first of June the bees usually find only enough honey for their own use. Last year was an exception, as we

build all fiber nests, something like a wasp's or hornet's nest; some have a nest full of little wax cells or capsules like birds' eggs filled with honey. In size these bees also vary greatly, some being tiny little things, while other kinds are larger than the European bee. The honey of one very small kind called maria seco by the Costa Ricans is sold and highly esteemed for medicinal purposes.

Some of the larger stingless varieties gather as much as 12 or 15 pounds per colony in a season. The method practiced in securing the honey is very crude. Usually a man twists and jams an old stick or iron hook around in the log gum from one end, catching the honey, wax, and brood in a gourd as they drop from the hive. When the honey is clean it often has a very fine distinct flavor, some of it tasting as if it were



flavored with vanilla extract. Two of the smaller varieties of native bees we have named robber bees because they always pounce into the hives of our bees to steal honey when we are extracting or working. I have never seen them rob out a colony, but they worry the bees considerably.

#### Average Yields.

We have made many mistakes since we came here, and have also learned much. We have increased the 6 colonies that we brought with us to 600 and have also sold some. Our crop will average almost 300

pounds per colony this year, figuring our stock at the beginning of the season; if we figure in all the increase, it reduces the average to a little less than 100 pounds.

Our stock came originally from The A. I. Root Company queens from their home yards, having been bought about six years ago. When we first came here honey was sold only in drug stores; but we have worked up a good local demand, and the largest wholesale store in Punta Arenas now keeps our honey in stock.

Punta Arenas, Costa Rica.



IN the February issue on page 80 is a brief discussion of a time-honored problem in comb-honey production, that of having the brood-chamber

## COMB HONEY PRODUCTION

### *How to Have Brood-Chambers Well Filled with Brood at the Beginning of the Honey Flow*

By Geo. S. Demuth

almost completely filled with brood at the beginning of the honey flow, so that there is neither much sealed honey left in the hive nor many empty cells in which the bees can begin storing within the brood-chamber when the honey flow begins. This highly desirable condition in all, or nearly all, of the colonies at just the right time is not easily attained, and too often only a small percentage of them happen to be just right in this respect when the honey flow begins; for it means that just at the beginning of the honey flow the colonies must have consumed practically all of the honey that had been stored within the brood-chamber for winter and spring, and at the same time must reach their maximum in brood-rearing. Colonies that happen to be in this condition just at the right time are usually the ones which work in the supers with the greatest energy and give the least trouble from swarming. To find the proper size for a brood-chamber that would hold just enough honey to carry the colony up to the beginning of the honey flow (at which time the honey should be practically all used up and the combs of the brood-chamber almost completely filled with brood) has been the dream of comb-honey producers for years. But the great variation in the way the bees come thru the winter, the variation in the amount of honey stored previous to the main honey flow from minor sources, and the variation in the time of the beginning of the honey flow have prevented the attainment of this goal.

#### Experiments by Quinby and Langstroth.

Before the advent of the modern beehive Quinby, after having experimented with box hives of various sizes, wrote in regard to this in 1853 as follows: "I am satisfied that 2,000 inches in the clear is the proper size for safety in this section and conse-

quently for profit." Strangely enough at the same time this was penned, Langstroth, working independently and without knowledge of Quin-

by's experiments, had already decided to build his new movable-comb hive to hold 10 Langstroth frames, it thus containing, when allowance is made for the frames and the spaces around them, almost exactly 2,000 cubic inches.

It must be remembered that these two great masters were trying to find the best capacity for the brood-chamber for the production of box honey, for the extractor had not yet been invented.

After 68 years and after having departed greatly from the recommendation of Quinby and Langstroth, comb-honey producers now generally admit that this size is about as near the long-sought goal as any yet tried, being smaller than that needed by the most prolific queens and best colonies and larger than is needed by others. In other words, under good management, as the seasons run, it is not far from the average size that will be well filled with brood at the beginning of the honey flow; but this does not take care of the better colonies which need more room for brood-rearing in the spring and does not bring good results for those colonies which do not fill these brood-chambers with brood.

As was pointed out in the last issue of this journal, the attempt to bring about the condition of brood-chambers that are honeyless but filled with brood in all of the colonies at the beginning of the honey flow, by reducing the size of the brood-chamber, almost resulted in "killing the goose that laid the golden egg."

At the present time the solution of this problem is being sought in exactly the opposite direction, that of increasing the size of the brood-chamber beyond the capacity of the most prolific queens so that there is still room for enough honey for safety, then



reducing to normal when the honey flow begins, thus approximating the methods which prove so successful in extracted-honey production.

#### Langstroth Depth for Comb Honey.

Whatever the defects in the standard Langstroth hive, as now made, for extracted-honey production there is a general agreement among comb-honey producers that this hive is well adapted for comb-honey production. It was originally designed by Langstroth as a box-honey hive and most of the improvements that have been made since have been to perfect it as a comb-honey hive.

If combs shallower than the Langstroth are used, the bees usually build up less rapidly in the spring, and in some locations shallower combs result in considerable pollen being stored in the sections. If combs much deeper than the Langstroth are used, it is more difficult to induce brood-rearing to the top-bar, thus resulting in the objectionable rim of honey in the upper portion of the brood-chamber.

#### Two-Story 8-frame Hives.

Many comb-honey producers who have an equipment of 8-frame hives use two stories previous to the honey flow, to provide sufficient room for extra stores and brood-rearing, permitting the queen the free range of both stories. When the honey flow begins these are reduced to a single story by taking away most of the honey and leaving most of the brood. At the same time two comb-honey supers are usually given so that the total hive capacity is not reduced. The combs that were removed (which may contain considerable honey and brood) are then given to other colonies, which need not be strong and which are not used for comb-honey production, where they are to be refilled with honey as the brood emerges, then put back upon the hives again after the comb honey supers have been removed at the close of the season. The hive-bodies containing the combs that were removed may be piled six or seven high on top of weaker colonies. These "piles" soon become powerful colonies because of the large amount of emerging brood. While this involves considerable labor it puts the colonies in excellent condition to begin work immediately in the comb-honey supers.

It is open to the objection that the 16 combs must be sorted, and it is sometimes necessary in this sorting to leave some of the combs which have a rim of sealed honey in the upper portion, these being combs from the upper hive-body. The plan is an excellent one, however, and may be used even with the 10-frame hive.

#### Separate Chamber for Honey.

To bring about similar results with less labor some comb-honey producers who use the 10-frame hive have provided a shallow extracting super for each colony. The shallow extracting supers contain the extra

stores needed for safety during the spring, thus permitting the standard brood-chamber to be used almost entirely for brood. They are taken off at the beginning of the honey flow when the comb-honey supers are given. In this way, the objectionable barrier of honey at the top of the hive is removed; and the comb-honey supers are placed down adjacent to the brood, which is a great advantage in stimulating the bees to expand their work into the supers and in reducing the tendency to swarm. This principle has been recommended by several extensive beekeepers even when extracted honey is being produced.

If the combs in the brood-chamber are uniformly good, having all-worker cells to the top-bar and only the few drone-cells usually present in the lower corners, 10 standard frames will hold nearly all the brood that a prolific queen is able to produce under the most favorable conditions, since they are practically free from honey and the brood extends to the top-bars. These food chambers can not well be tiered up above the comb-honey supers and left on the hives during the season, as in extracted-honey production, on account of the darkened cappings of the honey in the sections when brood-combs are placed above them. They must be taken off and tiered up on weak colonies which are not being used for comb-honey production, for they should be refilled with honey as the small amount of brood which they usually contain emerges. After they have been filled with honey these food chambers are ready to be given back to the colonies when the crop of comb honey has been removed from the hives.

The extra stores provided by either of these plans apparently stimulate the bees to rear a large amount of brood during the spring, usually resulting in at least one standard brood-chamber being well filled with brood at the beginning of the honey flow and colonies so strong that they begin work in the supers with a rush.

Thus by using a separate chamber for honey and a brood-chamber slightly smaller than the capacity of good queens, the safety of the colonies, so far as stores are concerned, is insured without laborious and expensive feeding which is too often not done when most needed; and, at the same time, the objectionable rim of honey at the top of the hive can be lifted off and the comb-honey supers placed upon a brood-chamber almost full of brood and practically free from honey.

Where honey granulates readily the large surplus of stores may sometimes be objectionable, but where honey granulates readily comb-honey production is not advisable anyway. Colonies so provisioned are usually built up so strong in the spring that most of the extra honey may be used up and the combs in the food chamber refilled with honey from early sources.



## NATIONAL HONEY ADVERTISING

### Campaign Proposed to Boom Honey. How to Raise Ample Funds

Advertising is the means by which an article is made conspicuous in the public eye. This same medium clarifies the vision of the multitudes as to whether the article in question is a necessity, an acquisition, or a luxury. There are numerous foodstuffs that have lain dormant or buried, so to speak, for decades and have been suddenly brought into prominence thru the channels of advertising. This is exactly the procedure that should be applied to honey. Too long has it been regarded as a supernumerary commodity. It is just about time that the beekeepers of America resurrect the fruits of their labor and pedestal honey on its rightful sphere. Instead of being utilized scantily in a few homes as a dainty luxury it should be used freely in every household in many forms of cooking, as a substitute for sugar, and most of all, because it is a natural, wholesome, and healthful sweet, and a big energy-producer. Again, it should be by all means administered freely to children, thus satisfying their desires for sweets and at the same time weaning them away from the unwholesome candies that flood the markets of today. Let us producers face the facts, and proclaim these facts, that honey is truly a wonderful product and, as a sweet, stands without a peer.

Our product, if properly marketed, commands a fair price at the present time. Our recent war and the excessive foreign demand are directly responsible for the stability in prices for the past few years, but this same foreign demand is decidedly on the decline right now and is daily dwindling. If conditions go back to the old levels, what will be the results? There is but one conclusion—prices will naturally decline along with the demand. There can be but one recourse, and that is to stimulate the demand within our own boundaries. Allow me to emphasize the fact, that this condition can be brought about by means of intelligent and well-directed advertising. The San Francisco Bulletin, under date of April 29, 1920, said:

"SAN FRANCISCO FIRM SELLS HUGE QUANTITY OF RAISINS.

"The increased consumption of raisins in this State is remarkable, according to figures submitted by the O'Malley-Collins Company of San Francisco, which sold 20,000,000 pounds of raisins in 1919. The increased consumption of raisins in the United States is marvelous. In 1911 there was harvested in California a total tonnage of 70,000 tons, and even this small tonnage appeared to be practically a drug on the market. At that time raisins were sold in a small way by the grocers, around holiday time, and utilized by a few bakers. The growers were

losing money, and each year found them further in debt. It was for this reason that the growers amalgamated and formed the California Associated Raisin Company, in hope of saving the industry. At the start it did not look as tho the new association was going to be successful. However, by hard work and constant advertising, they managed to convince the public of the enormous food value of the raisin. The bakers gradually realized that, no matter how good a product they produced in the line of bread or buns, raisins made it better, with the natural result that there is not a bakery of any consequence in northern California that does not today make a specialty of baking raisin bread, raisin buns, and pies. Where a retail grocer in 1911 sold one package of raisins, he is today selling five packages, showing that the demand from the housewife has also increased proportionally. During the year 1919 190,000 tons were produced."

Now, the question arises, how can ample funds be raised to finance a national advertising campaign on honey? Such an undertaking would be extremely simple and intensely successful, if it could receive the unselfish support of all the beekeepers thruout the United States. As a suggestion and as a means of raising the necessary funds, supposing every beekeeper would contribute to the national fund a minimum sum of five cents and maximum of ten cents for every colony of bees that he owned or operated. Thus, the owner of a hundred stands would donate not less than five or more than ten dollars for his proportion of the benefits that would be derived under the campaign.

I am prone to believe that every progressive beekeeper of our land would unhesitatingly come to the front and substantially support such an important work. The results would be far-reaching, and we can conservatively estimate that such a campaign, properly directed, would double or even treble the present demand.

There can be no reason why the above outlined adventure would not be a complete success, and every producer that sold a pound of honey would be the beneficiary. This idea is open to comment and further suggestions. Let us hear from the beekeeping fraternity at large and see if it is not possible, collectively, to take our product off the obscure shelf.

Yerington, Nev. Truxton V. Damon.

## COLOR OF DRONES

Drones from Imported Queens More Uniform than from American-Bred Queens

In 1871, in conjunction with Rev. H. A. King of New York City, I imported some Italian queens from Italy. It is my recollection that the drones from those queens



## FROM THE FIELD OF EXPERIENCE

were uniform in coloring. They did not have three yellow bands such as workers have; but their bands, while yellow, were uniformly clouded. One drone was as much a duplicate of another as one worker of another. It does not seem to be so today.

About two years ago I bought a breeding queen of one of our leading queen-breeders. Last year she proved a good queen, so this past spring I prepared to use her for requeening my yard. Her worker bees were uniformly marked. I could see no indication of an intermixture of foreign blood. However, when the drones began to appear I was astonished to find a great difference between them, the color varying from that of the typical yellowish Italian drone to one without a hint of yellow upon it, being instead a solid, shining, metallic black. There were more black than yellow drones in the hive. I discarded the queen as a breeder.

Shortly after this, in company with Frank Aten (whom some of the readers of this magazine will remember as a Texas queen-breeder) and a number of other beekeepers, I visited the apiary of one of the leading beekeepers of Travis County. He tried to maintain the purity of his Italians as a whole, but he had one colony of which he was particularly proud. The bees were as uniformly marked, and, in appearance, identical with the bees of my colony above referred to. So were the drones. Most of them were shining, metallic black. I called attention to the fact and was informed by several beekeepers present that this is not at all unusual, and that there is no uniformity in the marking or coloring of drones.

Returning with Mr. Aten, I asked him

privately for his observations. He replied: "When I was in the bee business several years ago, I imported hundreds of queens from Italy; and my recollection of the drones tallies with yours, that all drones showed yellow and were quite uniformly tho not so clearly marked as the workers." I am quite sure of the accuracy of my recollection. I raised a good many queens from the imported mothers referred to and do not recollect having seen a black drone among the offspring of the purely mated queens.

Austin, Texas.

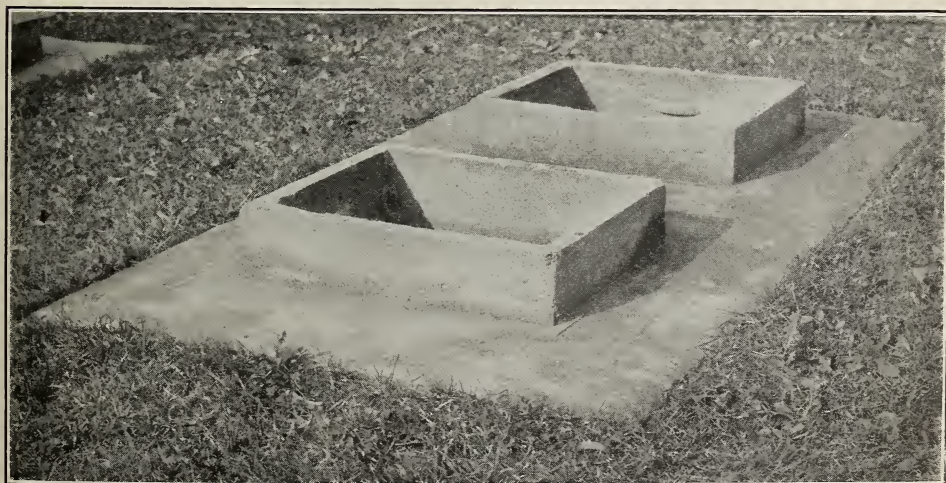
E. P. Stiles.

### CONCRETE HIVE STANDS

Their Many Advantages Described by a Beekeeper of Long Experience

I am sending two views that show a part of our home apiary, which contains 132 hives with concrete stands for the same number, and one view of our concrete hive-stand at close view.

The hives are the double-walled ten-frame Jumbo, and when the photo was taken they were ready for winter. After 35 or more years' experience with other sizes of hives and other modes of preparation for winter and of management in general, I find that these are by long odds to be preferred. Material for these concrete hive-stands is cheaper than that for any other satisfactory hive-stand, but the labor, of course, is more. In the end, however, labor is saved; for they remain level, stay in their places, and will not rot. Grass and weeds cannot grow up between and around the hives, and the apiary



A close-up view of one of Mr. Chrysler's concrete hive-stands, which he says give excellent satisfaction for several reasons.

## FROM THE FIELD OF EXPERIENCE

can be kept in order with a scythe or lawnmower without bumping the hives. One sack of cement is sufficient for four hive-stands, with gravel in proportion of four to one.

The concrete is placed on top of the ground; no digging is necessary, but the ground should be solid and level. The thickness at the outer edge of the concrete is one to one and a half inches and increases to two inches at the upright rim, which is six inches high above the ground. I have found that reinforcing is not necessary.

W. A. Chrysler.

Chatham, Ontario, Canada.

### WASHBOARD ACTIONS OF BEES

#### Method Employed by Young Bees to Work Off Surplus Nervous Energy

As early as my first year in beekeeping I first noted those peculiar actions of bees when they are apparently busy over the washboard doing the colony-wash. They roused my curiosity, as they do with everyone else who has any eyes for the study of our pets. After some thought I formed a theory and ever since that time have been subjecting that theory to the test of cross-examination. It stills holds with me, and I shall offer it to the readers of Gleanings. Possibly someone will knock a hole in it and thus help me to disprove the theory if it be unsound.

The theory is this—the bees are simply working off an excess of energy. If one will subject these actions of the bees to a careful analysis, he will perhaps follow the lines of observation and deduction which I will now take.

The most careful scrutiny fails to note

that the bees engaged in this activity are accomplishing anything tangible. If one could detect that they had some substance in their mandibles or on their tongues, or could feel assured that their stomachs were filled with other than what an idle bee usually has in its stomach, then it would be possible to make a start towards an explanation. No such opportunity is present, and we are forced now to investigate along some other lines.

First let us ask, "Is this action more prevalent at some times than others?" My answer to this question is, "Yes, these peculiar actions are rarely seen except in times of comparative idleness—times when the flowers are furnishing but little for bees to gather. Here the actions appear most noticeable in August, the isolated instances appear in other warm months." Then let this question come, "Do bees of a particular age take part, or is the action peculiar to bees of all ages?" My answer is, "Old bees never do this, and very young bees never do it. Only bees of the age of two or three weeks perform this action. Bees that have passed the nurse-bee stage and have had their cleansing flight, bees that are comb-builders are the washers."

Next let us seek analogous actions. The captive lion or the caged bear will for hours keep up a ceaseless shuffle from one end of his cage to the other. The captive giraffe will for hours mark time with his feet. Now if these animals were free they would be roaming the plain or the forest. Their active muscles are permeated with nerve fibers which keep up a constant call upon those muscle fibers to exercise. Will he, nill he, the poor animal must restlessly contract and relax those muscles.

We ourselves show the same tendency.



The Chrysler apiary with concrete hive-stands.





FROM THE FIELD OF EXPERIENCE

Children kept too long in their seats at school soon arrive at a condition that demands a chance to use the muscles. Travelers at sea will for long stretches of time walk the decks. Sometimes this is done from sense of duty, but more often it is done because of irresistible nervous impulse. After one or two turns their scenery becomes about as varied as does that of the caged tiger, but they keep on walking.

If I am right in interpreting the age of these bees, namely, that they are of the wax-working age, what should we expect of such bees? Little honey is coming in. No comb need be built. There are thousands of workers, and there is but little of their specified work. The muscles in their bodies which most nervously call for action are those concerned in the making of comb. The poor bees cannot keep still, the hive is hot, they have no inclination to fly, they crowd out of the hive in ranks and keep up a ceaseless making of ghost-comb on the alighting-board and the wall of the hive.

Why the worker bees in question take just that form of working off their surplus nervous energy would be a difficult thing to assert with confidence. It might be suggested that this method is a safe and sane one, and fulfils every requirement. It surely is safer than a general flight would be. If bees roamed in idle flight many would be caught by birds, others by insects, others be lost by various means.

It is always safe to say that bees, whatever they do, are doing what their ancestors have done from remote times. Doing thus they have survived the vicissitudes of countless centuries of active life with all its dangers. Who knows how many hapless colonies have gone into extinction because they

departed from the beaten path? Who knows how many side paths in all those years have been ventured upon, some with disaster, others with success? No one knows, of course, but we all know that the bees are here still at their old job. It would not be a foolish thing to assert that possibly the very existence of the honeybee rests upon the fact that in some remote age worker bees of certain ages formed the washboard habit.

Norwich, Conn.

Allen Latham.



## LOCAL HONEY ADVERTISING

## How a Beekeeper Sold 10,000 Pounds of Honey at Retail

It pays to advertise, is the old slogan, and my advertisement gave a very good profit on the investment. Every person that put his eyes on the paper must have seen the ad, as it was the most prominent ad in the paper, at least in respect to the size of the word "Honey." This ad cost me about \$9.00 an issue, and was shown twice, followed by smaller ads. My total bill for this class of advertising was \$50.00, and it moved for us about 10,000 pounds of honey at retail. Surely this was a good investment.

C. W. Aeppler.

Oconomowoc, Wis.

[With the present condition of the wholesale market for extracted honey, local advertising of this kind is probably the very best solution of the marketing problem. Many beekeepers have already disposed of large crops of honey at fair prices by advertising in local papers or in farm journals, and every pound sold locally relieves the wholesale market just that much.—Editor.]

variety Store

HENRY PETERSON

MILTON, WISCONSIN

W. H. Martin was the winner of the approaching a tug boat, and Mr. Lawrence won the bridge prize. A group of freshmen and sophomores and Mrs. Brown

white coat. The maitron is home, sir. A Baron of New York, wore a flesh-colored gown and carried pink roses. Joseph H. Hertz, of B'nai B'rith, was best man.

Reserved Seals \$100

Reserved Seals \$100

General Admission 50 cents plus War Tax

Seats Now on Sale at Rasmussen Bros. Pharmacy

Seals Now on Sale at Rasmussen Bros. Pharmacy

[illegible]

WISCONSIN EXTRACTED

# HONEY

THE FINEST IN THE WORLD

## EAT HONEY—NATURE'S OWN SWEET

## WISCONSIN HONEY FARM

PRICES:

One 5-lb. pail, \$1.85	Case of 12, \$22.00
One 10-lb. pail, \$3.60	Case of 6, \$21.60

Oconomowoc, Wis. Phone 960-j11

Page 960-j11

**Mail Orders Solicited**

**To You** By Express, Parcel Post or Freight. Delivered anywhere in Oconomowoc

Mr. Aeppler's advertisement extending across the foot of a page in the Oconomowoc Enterprise, Aug. 6, 1920.

ON page 74 of February Gleanings, speaking of the proper cellar temperature for bees an editorial says, "It should be high enough so the bees will not need to generate much heat to keep the cluster warm, yet low enough to cause the bees to form a cluster and remain quiet within the hive." No better rule than this can be given for a cellar or hive temperature during the bees' winter confinement.

\* \* \*

I agree most heartily with A. I. Root, in "Our Homes" for February, in standing up for the Christian Sabbath and in denouncing the Sunday newspaper. I fear few people realize the benefits and blessings the world receives from Christianity, imperfect as it is. If we but stop to look around and see how large a part of the sorrow and suffering of the world comes from the lack of Christianity, and again note how large a part of them would disappear if the Golden Rule were universally followed, we should surely have peace on earth, and blessings of which we can now hardly conceive.

\* \* \*

Grace Allen, on pages 94-95, tells us in a fascinating way some of the charms and inspiration that come to even a "sideline" beekeeper, and she is right. How true it is that as one becomes enthusiastic over bees he soon becomes interested in every tree and shrub and flower, every bird, animal, and insect; and slowly and stumblingly he learns to read the thoughts of the Great Creator, and before he knows it he is living in a new world!

\* \* \*

Our friend Byer, on page 98, makes a good point when he asks, "Do we find the cattlemen asking for a tax to be placed on every bovine specimen in Ontario to raise a fund for inspection, so as to have tuberculosis, foot and mouth disease, blackleg, etc., banished from their herds? He argues that no more should beekeepers tax themselves for the inspection of their bees. He is quite right. It is as much the duty of the government to protect the beekeeper as the dairyman or breeder of swine.

\* \* \*

Morley Pettit, on page 76, speaks of a "food-chamber." Now this is a comparatively new word and a good one, too. Food-chamber rhymes with brood-chamber and one is complementary to the other, neither perfect without the other. It is not expected that the food-chamber will always contain only food or that the brood-chamber will never have honey stored in its combs,

## SIFTINGS

J. E. Crane

but that the main use of one is for the rearing of brood and the other for the storage of food. Where we are producing section honey in short seasons,

and at the close of the harvest we remove the supers of sections and find but little honey in the brood-chambers, we can go to our colonies that have been given food-chambers instead of sections to fill and remove a food-chamber and give to each colony run for comb honey enough honey to keep up brood-rearing until the close of the season. It will then be found, under normal or average conditions, that such colonies will generally have a good supply of bees and honey for winter. Where seasons are short, I believe it will prove good practice to use a part of the yard for filling food-chambers for the use of colonies run for section honey.

\* \* \*

In a letter from Luther Burbank given by A. I. Root, page 109, Mr. Burbank says, speaking of the annual sweet clover, "These plants offer a great opportunity as a plant improver, as they vary very greatly." Now who shall take these plants and produce something still more useful than the plant we now have?

\* \* \*

No one need lack for the best methods of wiring frames after reading those given on page 82 and following pages; but, after all, much will depend on the thoroughness with which the work is done. The best system may fail, if the work is done in an easy, slipshod way.

\* \* \*

Carl E. Johnson, page 101, is on the right track in placing a tin tube three or four inches above the entrance to connect the brood-chamber with the outside thru the packing to prevent clogging. We have such tubes on hundreds of our hives wintered outdoors, only we use a 7/8-inch tube.

\* \* \*

Louis Biedgar of Texas, in the Beekeepers' Item, wonders why all northern beekeepers want their hives to face south or southeast, while he has the best results with hives facing north during winter. It is just "locality," my friend; yes, "locality."

\* \* \*

That is interesting reading about "Nails and Nailing," on page 88. How many of us know the proper length and size of nails, or the distance apart to place them in different kinds of wood?



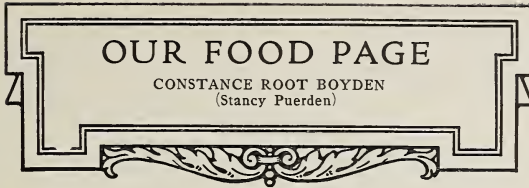
A CERTAIN man whose work is with the publicity end of selling honey said to me recently, "Mrs. Boyden, I wish you would touch on the necessity of emphasizing the purity of honey." And that calls to mind an incident of which I am going to tell you.

A few weeks ago at a dinner, while we were enjoying our coffee a professional man who sat next to me said: "You know a large percentage of what we buy as coffee is not coffee at all. It is a clever substitute pressed into the shape of the coffee berry." I politely tried not to look as incredulous as I felt. I suppose some of the coffee which is sold ground may be adulterated, altho Uncle Sam's pure food laws are such as to make it unpleasant for the offender if he is caught; but I cannot think it would pay to make expensive machinery to press the stuff into the form of the coffee berry, even if such a business could remain undetected.

Perhaps it was the more difficult for me to believe such a story, told by the narrator in good faith, of course, because of that old story of artificial comb honey, which seems to be such a hardy perennial. Years ago, when I was a very small girl, A. I. Root offered \$1,000.00 reward for a sample of artificial comb honey and had cards printed to that effect; but, altho the cards were widely distributed and the offer is still open, no one ever claimed the reward. Perhaps the story originated from the fact that beekeepers' supply houses buy quantities of wax and make it into foundation, and the uninitiated do not know how little resemblance there is between the strip of foundation and the finished comb.

Man has more or less successfully imitated flowers and fruit in surface appearance only. I don't believe anyone has ever even attempted to make an artificial fruit like the original in texture, juice, and flavor, one that could be eaten. But did it ever occur to you that comb honey with its fragile, translucent, pale golden beauty simply cannot be successfully imitated, even as to outward appearance. You have doubtless seen artificial fruit which might deceive one at a distance, but you never saw a rubber or composition model of a section of comb honey, did you? And artists and photographers will tell you it is one of the most difficult subjects to paint or photograph satisfactorily.

And yet that absurd story of artificial comb honey has been told within the past year not 50 miles from Medina, which is sometimes referred to as "the sweetest town on earth," on account of the amount of honey handled here.



AS to extracted honey, that is a different story altogether. It undoubtedly could be adulterated in a way that would deceive the aver-

ago family buyer. Notice I say "could be," not "is." In a State which has inadequate pure food laws the unscrupulous dealer could sell an adulterated honey in a small way, and perhaps does for a short time. But if his business grew to such an extent that his honey was shipped into another State, then the long arm of Uncle Sam would reach him and make him realize that he was engaged in a very unprofitable occupation, to put it mildly. For the Federal laws are very strict when it comes to shipping impure or adulterated foods from one State to another. And in most States there are pure food laws which protect the consumer just as adequately.

Someone may say, "The honey dealer or packer may have the best of intentions and yet in buying honey he may unwittingly get hold of a lot of adulterated honey from an unscrupulous shipper." That is only too true, and that is why the largest honey bottlers in the country maintain a well-equipped chemical laboratory where a sample of every shipment is analyzed.

Now you want to know, don't you, whether many samples of adulterated honey have been detected by the chemists whose duty it is to guard the honey-packing business. Some adulterated honey has been detected, it is true, but I believe I am safe in saying it is only enough to be the exception which proves the rule that the bulk of honey on the market is pure.

IN a recent issue I mentioned a sanitarium where the only sweet allowed to the patients is honey. The head of that institution, Bernarr McFadden, who also founded the magazine *Physical Culture*, writes on "Breaking a Fast," in the January issue of *Physical Culture*. Whether we approve or not of the modern fad of curing various ills by fasting, we beekeepers can heartily endorse the method of breaking the fast and rejoice that a prominent health writer, not particularly interested in bee culture, appreciates the food value of honey. The following is a quotation from his article:

"But the principal thought to bear in mind in breaking a fast is the use of very minute quantities of food and large quantities of water, warm or cold, whichever may be the most pleasing. It is frequently desirable to flavor the water with a little fruit juice or with honey. In fact, water sweetened to taste with honey is perhaps the safest method of breaking a long fast. Honey taken in this manner is absorbed al-

most immediately into the system, and will assist in giving the digestive organs the strength needed to digest other foods. An orangeade sweetened with honey is also effective and valuable in these circumstances."

SOME of the readers may think OUR FOOD PAGE is beginning to bear a strong resemblance to a yeast advertisement in the way it brings up the subject of vitamins so frequently; but, altho I plead guilty to beginning the subject, it is the many letters from you subscribers which lead me back so often.

Let me begin by making this disappointing announcement: The article telling of his research work on vitamins in honey by Philip B. Hawk of Jefferson Medical College, Philadelphia, is not yet out, nor has he notified us in what publication it will appear, altho we received a notice that it was in type weeks ago. The proverbial mills of the gods have nothing on some scientific men for slowness.

To make the subject clear to those readers who have not seen the articles on vitamins and to refresh the memories of the rest, let me review a bit. Vitamins are sometimes defined as unidentified dietary essentials without which there cannot be proper growth, reproduction, or maintenance of health in human beings and animals. Some variety is present in practically all foods in the natural state, but they are largely removed or destroyed in many modern foods by so-called refining processes.

Three classes of vitamins are now recognized: Fat Soluble A, Water Soluble B, and Water Soluble C. Water Soluble B was the first vitamin discovered, and it is found in wheat germ, rice polishings, yeast, etc. This prevents such diseases as beriberi and polyneuritis, and encourages growth. Fat Soluble A is found in abundance in the fat of milk, egg yolk, the green, leafy vegetables, young carrots, cod liver oil, etc., and we now know thru Prof. Hawk's experiments that comb honey contains distinct amounts of it. The absence of this vitamin in the diet causes lack of growth and reproduction, rickets, and an eye disease which results in blindness. Water Soluble C is in living vegetable and animal tissues and is found in abundance in fresh fruits and fresh vegetables, and its use prevents scurvy. We have known for some time that citrus fruits, particularly oranges, are rich in this vitamin, but it has more recently been pointed out that tomato juice compares favorably with that of oranges.

On the ordinary mixed diet none of us may be in danger of the blindness brought on by lack of the Fat Soluble vitamin nor such diseases as beriberi or scurvy, but it is probable that much ill health less well defined is due to a deficiency of one or more of these vitamins in the diet.

The report of Prof. Hawk's finding dis-

ting amounts of the Fat Soluble vitamin in comb but not in extracted honey immediately led to a discussion which brought out the fact that two samples of extracted honey were used in the feeding experiments, one of clover honey, unheated, and one of a blend, heated only to the point which prevents granulation under ordinary circumstances. Professor Hawk believed that the wax contains the Fat Soluble vitamin, while some of us doubted whether nature would put so valuable a food constituent in the container of the food for the bees and thought it might be in the pollen dust which is found in minute quantities in honey. At this point I am going to quote from "Making Friends With Vitamins," an interesting popular article in the February Ladies' Home Journal:

"Neither the ordinary cooking nor pasteurization has much effect in diminishing or deteriorating the Fat Soluble vitamin. It seems that butter loses some of this virtue by long storage."

Now I wish some one could make some feeding tests with honey immediately after it has been taken from the extractor. If the Fat Soluble vitamin is unstable enough to disappear from butter after long storage, it might be lost from honey in the same way. The article from which I quoted did not state what was meant by long storage, whether it was some three months or several years.

ALTHO scientific men seem to think it may be accidental here is an interesting fact: the color yellow seems to be associated with the Fat Soluble vitamin in foods. Notice that butter fat, yolk of egg, yellow corn, young carrots, and sweet potatoes contain the vitamin while white corn is said to lack it. Yellow is one of the colors which go to make up green and we know that the green, leafy vegetables are rich in this vitamin. I believe it was R. Adams Dutcher, of the Minnesota Agricultural Experiment Station, who has in the past done some research work on honey, who pointed out that the milk of grass-fed cows is richer in the Fat Soluble vitamin than the milk of a cow on winter rations; and we country dwellers all know that butter fat in the early summer is a rich yellow, and that the egg yolk is a richer color when the hens have access to green foods. The fact that honey, wax, and pollen have more or less of the yellow tint may or may not be significant.

A certain dairy lunch in Cleveland features honey prominently in connection with its dairy products. As comb honey contains the same vitamin which is found in the fat of milk the association of them seems particularly appropriate, altho I don't suppose the proprietor had any such scientific reasons for handling honey. Perhaps the frequent scriptural association of milk and honey subconsciously influenced him.

(Continued on Page 187.)



THE great Linnaeus once wrote of the opening of a flower, "I saw God in His glory passing near me, and bowed my head in worship."

Any man who has let his heart keep pace with his head in his study of flowers will repeat the words of the old Swedish botanist, while he, too, bows his head in worship before the marvel and the beauty of a flower.

If he be a beekeeper, tho he will love all flowers, he will gradually develop an especial interest in those that bear nectar for his bees. And what a list that is! There are almost countless flowers that help in the economy of the hive, many of them yielding such small amounts as to be scarcely noticed by the beekeeper, yet in the aggregate contributing substantially to the bees' income. Learned and careful observers have varied greatly in the attempt to estimate the amount of honey consumed in a year by an average family of bees. One of the lowest estimates, however, if not the lowest, is 200 pounds. It takes an immense quantity of nectar to make 200 pounds of honey; it calls for millions of trips to the fields and countless flowers to be visited. And in addition to what is gathered for its own needs, the average colony in the hands of a skillful operator will yield a surplus of from fifty to several hundred pounds of honey.

There is a popular misconception, however, outside the ranks of beekeepers themselves, as to the value of such flowers as those we cherish in our own gardens, roses, daffodils, dahlias, nasturtiums, and all the lovely array. Often a person who has just thought of the possibility and pleasure of keeping bees will exclaim enthusiastically, "And I have the loveliest yard for them! All sorts of flowers!" It may be a lovely yard to keep them in, in that it makes a charming setting for the hives, but the amount of nectar in even a large garden is not enough to be considered. It requires great stretches of nectar-bearing flora to yield enough to make even a few colonies surplus-producers. Yet there are very few places where one or two colonies will not flourish. For in nearly every locality there is at least one important and fairly dependable source of nectar, in many localities there are several, and in some favored spots there is almost a continual flow.

Probably the honey plant that is most important over the widest area is white clover, the little creeping Dutch white clover. This springs up of itself, making a soft green cover over pasture and lawns, roadsides and commons, until May comes swinging her baskets of beauty across the land: then the white clover puts out its millions of

## Beekkeeping as a Side Line

Grace Allen

blossoms and makes a soft white cover for the earth. All thru the east and north of our great country and our great neighbor Canada this nectar-

yielding plant spreads, producing hundreds of tons of the most excellent honey. It crosses the Mississippi, running west for a state or two, and crosses the Ohio, running south for a state or two. But along these edges of its habitat, it blooms with less wealth of profusion and less wealth of nectar, too.

Thruout the irrigated sections of the mighty West, alfalfa, a first cousin of white clover, becomes the main source. One strange thing about alfalfa is that east of the Mississippi it is of little or no value for nectar. But what fine-flavored alfalfa honey from the West crosses the Father of Waters by the carload!

Sweet clover is what we may call a coming honey-plant. It is already here, extensively, yet it is still coming. For it is growing constantly more popular with both farmers and beekeepers. It flourishes in the white-clover region, the alfalfa region, in the South—in fact, almost anywhere. It has lived down a bad reputation it never deserved. A noxious weed it was once called, but now agricultural stations vie with one another in adding to our information regarding its possibilities. It has one characteristic that endears it to beekeepers. Tho taking most kindly to a limestone soil, it easily takes root and grows tall and rank when sown along roadsides and railroad cuts. The honey of sweet clover is so spicy and pungent that many an uninformed purchaser has accused it of being artificially flavored with cinnamon or vanilla.

In California the sages are the chief dependence, the sages and the citrus trees. There are white sage and black, purple sage and still others. And sage honey and orange honey are deliciously worthy of California. In Texas and the great Southwest are mesquite, catclaw, huajilla, and other honey plants unknown in other parts of the country. In Florida and her immediate sister States are citrus trees, gallberry (holly), tupelo, sour gum, and that mighty yielder, black mangrove, killed or tragically injured a quarter century ago by an unforgettable freeze from which it has scarcely yet recovered. And in its own proper but varied sections is cotton, with nectar not only in its blossoms, but also in "extra-floral nectaries" under the flowers and leaves.

One of the first things the new sideline beekeeper will need to learn will be what nectar-bearing plants are in his own locality, and when they bloom. His "locality" as a beekeeper will be the area visited by his

bees, roughly represented by a circle having his hives for its center, and sweeping around on all sides on a radius of—say from a mile and a half to three miles, usually. Indefinite? Yes, but the statement is no more so than the fact itself. It depends on so many things—what there is to gather near and far, hills, forests, water, winds, and other things. Bees are supposed usually to make a flight of about a mile and a half average. Claims of seven and eight miles have been made, more or less well supported—but conditions being always unusual. It is really quite simple. They can and will fly very far if there is nothing near to gather and no great obstacle in the way; when there is pasture nearer, they are wise enough to forage there instead of flying further. Wordsworth knew that:

“ . . . . . Bees that soar for bloom  
High as the highest Peak of Furnese Fells  
Will murmur by the hour in foxglove bells”

that are nearer home, and be content. So the question, “How far will my bees fly?” can not be answered in one word.

The succession of main nectar-bearing bloom in the average white clover area is about like this. Early in the spring, indeed even while it is still wintry, the earliest maples and willows and elms will come into bloom, and in those fringy tree-tops the bees will find abundant pollen and some nectar. These early sources, and usually all that precede the white clover, will be of value only for what the beekeeper will learn to call “building up the colony,” that is, for feeding the thousands of young bees that must be reared before the main flow comes on, so that they may be ready to rush out to gather it in all its profusion. Then in March or April, according to latitude and season, orchards and scattered fruit trees will burst into bloom. From all these, apple chiefly but likewise peach, plum, pear, cherry, the bees will gather varying amounts of both nectar and pollen. The beekeeper will fairly hold his breath—aye, and the apple orchardist may well hold his—in his eagerness for good weather during this period, that his bees may have full advantage of this bloom. Then there may be a dearth, until May or June spreads out the clover bloom. When it comes, it will last perhaps three weeks, perhaps eight, probably averaging six weeks. This is the golden period of the beekeeper's season, the time when the bees rush in and out, and cram the new thin nectar into thousands of waxen cells to ripen into honey. The wise beekeeper never lets them become cramped for storage space, for from this flow he will take the surplus honey for himself. After this, summer often drags in another dearth, in late July and August—tho of course what happens in one month in one latitude happens in another month in another latitude. Then come the flowers of autumn, chiefly wild asters and goldenrods, gay and gen-

erous composites. Of these two the goldenrod is the gayer while the aster is the more generous, and therefore more important to the beekeeper. And again the bees make merry, gathering what they will need for food during the long silent winter.

This, then, very briefly, is the general succession of the flora of the white-clover region—early trees and fruit bloom to build up on, white clover for the main flow, the flow for surplus, and fall flowers for winter stores.

Yet to this must be added many things. Some localities are favored with certain additional sources of nectar in sufficient quantity to count, and other locations with still others. In the spring, dandelions may make the earth a veritable “Field of the Cloth of Gold,” where the bees will gather both pollen and nectar, more pollen than nectar. How they reel in with their loads, dauntless buccaneers that they are! In some places, between fruit bloom and white clover, the black locust tree hangs out her graceful clusters of fragrant white blossoms, heavy with nectar. In other sections thru the spring or early summer come other tree nectars, basswood, one of the heaviest yielders when it yields, sourwood in the mountains, and tulip poplar, with its great blossom-bowls filled with insect guests. In some places farmers may have extensive acreage of alsike and crimson clover, that spread their brilliant bloom for the bees in spring or early summer; while bees elsewhere will gather midsummer riches from the heavy yielding buckwheat. Over wide areas sweet clover blossoms in July and lasts till fall. In some places late summer sees heartsease and Spanish needle giving of their sweets, or a little later, boneset spreading her feast. There are some sections where a second surplus may confidently be expected, from sweet clover perhaps, or buckwheat or boneset.

Among the countless minor sources of either nectar or pollen, which in certain favored places or seasons may become important, are wild raspberry and fireweed (willow-herb), especially in the burned-over forest lands of the North, sumac, wild sunflowers, milkweed, pennyroyal, manzanita, persimmon, barberry, horsemint, thyme, and many others, including in lesser degree even our humble garden friends, asparagus, carrot, mustard, and turnip. Corn gives pollen, and some people claim nectar too, from the tassels (at least one beekeepers' convention has had a sample of “co'n tossel” honey proudly displayed). Wayside weeds like cocklebur and ragweed give pollen and the Canada thistle, nectar. Even the parasitic mistletoe brings its gifts, blooming in Texas in January and February, and thus giving the bees of the Lone Star State their first nectar and pollen of the season. And, oh, the many, many others!





## FROM NORTH, EAST, WEST AND SOUTH



**In Southern California.**—There is little or no sale of honey except in small lots in a retail way. Almost all crops are in the same boat when we consider prices. All expected just this reconstruction period, and yet few were prepared for it. Supply dealers are offering much lower prices to the beemen than two or three months ago. There is no cause for any great anxiety in the matter. Prepare for a crop and produce it just as economically as you can, consistently with the general conditions. The writer has sold honey in times past at a figure really below the cost of production, if an honest labor and expense charge were made. But with present methods of marketing, it is not likely that we shall be called upon to do so again.

Southern California has had a fine lot of rain during January. Plant life is about normal for this time of year (Feb. 4). Rain-fall first and then the right weather conditions make our native ranges yield the nectar.

At a recent meeting of the Riverside County Beekeepers' Club, one of the matters discussed was that of a state-wide law regulating the moving of bees thruout the State. The county-ordinance plan is becoming a nuisance to many migratory beekeepers. A committee was appointed to take up the matter and see if something cannot be done or a law enacted governing the matter. Reasonable protection from disease is all right, but a law such as, "No bees to be moved from a district or location within 25 miles of an apiary containing foul brood, etc.," is preposterous.

A letter was read from an Inyo County beekeeper describing the "contraption" found when a thief was surprised at 3 a. m. in a beeyard. This fellow had been shaking bees from the hives into this wire box and had been carrying them away, leaving the hives to all outward appearances the same as before. But upon opening the hives the owner found them almost depopulated. Several apiaries have been almost ruined in this way. The man who came on this thief had been so worried about his apiary that he could not sleep and walked out into his yard at this early morning hour. He so completely surprised someone that the thief in his haste to get away left his outfit. He left also a gunny sack that had been wrapped around his feet and some red hair as he hurried thru the barbed-wire fence.

Our committee on prevention of bee-stealing reported progress and recommended one or two methods whereby beekeepers might identify their property at any time.

Several rewards were paid by the club the past season for the conviction of persons found guilty of setting fire to bee ranges. The members present were not satisfied with the results, and a resolution was

passed protesting against the leniency of the punishment imposed.

We are painting the hives containing bees in our out-apiaries. Those in one story are painted first, as we can paint the supers that we take off to better advantage after being removed from the hives. These colonies were all examined during the fall and left with enough stores to last until February or March under normal conditions. But this being an open, dry winter, it is likely that a number will need some attention soon. We shall look into any doubtful ones and give frames of honey from those that can spare them. This condition we ascertain by lifting the hive or else raising the cover and glancing at the top-bars for sealed honey.

Members of the committee on advertising for the American Honey Producers' League report progress and a willingness of both supply dealers and honey producers to donate liberally to a fund to advertise honey nationally. This seems to be a good way to start, and, as the organization is perfected, all honey sold thru the efforts of the organization should bear the greater share of the expense. If the beekeepers could be brought to realize the importance of advertising, all would be willing to give a small per cent of their income for this purpose, and the rest would be easy.

Corona, Calif. L. L. Andrews.

\* \* \*

**In Northern California.**—Last spring a number of beekeepers from Merced County and points north of Sacramento reported alarming losses of bees. The losses occurred in isolated apiaries. In some cases there would be but a handful or two of bees in a hive, which otherwise had from six to ten frames of brood. The bees remaining in the hives were perfectly healthy, and there were no indications at the hive entrances to suspect poisoning or some new adult bee disease. Frequently queens were missing as well as bees, and in one yard in particular there were not enough bees left in some of the colonies even to start queen-cells. Furthermore, some colonies with full brood-nests had supers partly filled with fresh uncapped honey. The losses were due unquestionably to bee-highwaymen or bee-gangsters, and they occurred at a time when pound packages were very much in demand. In Stanislaus County several beekeepers discussed the situation, and it was thought best not to make the matter public but to try to catch the thieves. There were no more losses reported, which was, no doubt, due to the fact that the demand for package business was considerably on the decline. It appears that the robbers would drive up to a yard towards dusk and proceed to shake bees into empty cages. Such a procedure takes but



## FROM NORTH, EAST, WEST AND SOUTH



little time and leaves mighty little evidence upon which to form a clue. We hope that our package men, who buy bees from various beekeepers in order to supply their demand, will endeavor to make their purchases only from reliable beekeepers.

For two winters now we have not reported such bright prospects, owing to lack of rain in our section. This winter we had three or four times the amount of rainfall that we had last winter, and our rainfall to date is well above normal. Not since 1916 have we had a good crop. Of course, in the irrigated districts alfalfa has yielded but not to the extent that it should, for the reservoirs held an insufficient amount of water, due to the lack of snowfall in the mountains. Alfalfa, however, represents but a portion of our crop, and ordinarily August, September, and October give us fine yields from the various fall-blooming plants, including the willows, which are responsible for the aphid honey. The rainfall during the past few years has not soaked the soil sufficiently to insure the best conditions for our fall honey plants. From present indications it would appear that our valleys are getting their much-needed drenching and that we may again enjoy a fall honey harvest.

If it isn't one thing it is another. For several years now the crops have been light but prices good. We are now confronted by good crop prospects but also by a falling and a weak honey market. The situation is far more serious than is generally supposed, as you will be told by all beekeepers that have kept a proper set of books and know their cost of production covering the calendar year for 1920. If our cost of production for the coming year should be as high as it was for 1920 and the price of honey remains at what it is quoted today, then the business of beekeeping is going to be operated at a loss. It is the opinion of the writer that even under such conditions a normal crop of honey would not be a sufficient production to insure a profit to the business. It surely would not be if the production consisted of low-grade honeys. The remedy, on the one hand, is to cut the cost of production. Labor, which is the principal item, no doubt will receive a reduction this year, and containers are another item which has always been too high. In the future, we hope that an exchange will make it possible for practically all of its members either to pack directly in 5 and 10 pound pails or to furnish them with steel drums, which can be used over and over again, as a means of transporting honey to the bottling plants. On the other hand, the remedy lies in receiving a better price for our product. In order to accomplish this the Exchange proposes to advertise its brands.

The remedies heretofore mentioned are

directed chiefly to the bottled products. Our low-grade honeys are in dire need of a higher protective tariff, if their production is to be made worth while. Central and South American beekeeping appears to be on the increase, and the United States is not by any means a heavy exporter of honey. It would appear that a tariff of 20c per gallon should be restored on honey imported into the country. Let us trust that the Exchange will become a member of the Agricultural Legislative committee and present before this body its desires along the lines of a protective tariff. The Exchange could gather the export and import statistics and such price data as are necessary, but it would have to receive from its members their figures on cost of production. It is exceedingly strange that a matter so vitally important to our business as the cost of production, has received so little attention in the past not only by the beekeepers themselves but also by the beekeeping press.

Big Sur, Calif.

M. C. Richter.

\* \* \*

**In Texas.**—The weather thruout January has been very mild, even for Texas. Two short periods of cold occurred, there being frost on two mornings. A large portion of the month was warm and bright so that many plants bloomed. Peaches, pears, huisache, rock brush, agarita, and numerous annual plants are in bloom all over southwest Texas. Mistletoe, elm, elbow brush, willow and swamp maple are in bloom in central and north Texas. Bees have been active thruout the commercial section and have consumed large amounts of honey. Perhaps 10 per cent of the colonies need feeding.

The beekeepers of Texas were much interested in the various references in the bee journals of the past months relative to the soil and honey plants. We believe that nowhere else is soil relationship so plainly shown as in Texas. Unique among these plants are huajillo, como, cotton, and the two kinds of horsemint. These divisions are so marked that within a half mile the flora changes entirely.

The Texas Honey Producers' Association held its annual meeting at San Antonio, Jan. 18 and 19. A large number of members were present. The report of the business showed a very prosperous year. During the year the capital stock was increased from \$15,000 to \$65,000 and all stock sold. \$64,180.25 represents the amount of bee fixtures sold, and \$181,529.70 the value of honey placed. Because of the increased capital stock two additional directors were elected. The board for 1921 consists of the following: E. C. Collier, Hillsboro (formerly Goliad), president; W. O. Victor, Uvalde, vice-president; Alma M. Hasslbauer, San Antonio, secretary; Louis H. Scholl, New Braunfels; Louis





## FROM NORTH, EAST, WEST AND SOUTH



Biediger, LaCoste; Wm. Zimmermann, San Antonio; Ambrose Johnson, Laredo; R. A. McKee, Velasco, and E. G. LeSturgeon, San Antonio, manager.

The annual Mexican supper was attended by about 100 members and friends, and only those who have been at one of these banquets can picture the amount of bee-fur that was pulled. The new packing plant was inspected by the members. The heating and blending tanks, the net weight fillers and can-plugging machines were of great interest to the visitors.

The members voted that the Association become a member of the American Honey Producers' League and pay the advertising assessment levied by that body. The resolution committee in its report included a memorial to Dr. Miller, a section pledging the members to support the movement for the establishment of a memorial scholarship, and one thanking the gentlemen who are in charge of this work for an opportunity to help.

The members were much in favor of advertising honey nationally and Texas honey locally. In addition to their assessment to the League, the Association voted to pay one cent per colony for further advertising.

As has been reported before, the beekeepers of Texas, in spite of the very large crop of 1920 and the slump in market, have disposed of their crop, most of it having been sold before the break came. One reason for this is the fact that most of the crop was on the market by July 1.

H. B. Parks.

College Station, Tex.

\* \* \*

**In Ontario.**—Weather conditions up to date (Feb. 9) have continued milder than usual, and we have had but three days when the mercury has touched zero mark. While bees appear to be wintering well outdoors, some beekeepers have reported that they have had difficulty in keeping temperatures low enough in cellars and other repositories. Out near Kingston our bees are wintering in a repository built entirely above ground; and, while this particular building generally gives good results, yet it means constant attention to keep it cool enough in a winter like this. With over 250 colonies in the building, naturally a lot of heat is generated from so many bees.

While the moderate weather is good for the bees, clover is suffering more than usual from the effects of alternate freezing and thawing. There is no snow here at all, and this condition applies to most of old Ontario south of the Parry Sound district and west of the eastern fringe of counties. There may be some exceptions to this statement; but, in the main, judging by reports I have re-

ceived, it is correct. Naturally prospects look none too good for clover, but it is too early to make any authentic statement as to what we are likely to have by May 1.

Honey markets show no improvement since last writing, and the wholesalers have very little in stock, the bulk of supplies on hand, contrary to usual conditions, being mostly in the hands of producers, so far as I can learn. It looks as tho concessions will have to be made to move the crop before another season. On the other hand, with prospects poor for clover in 1921, some may prefer to take a chance and hold their honey over.

The different schemes, given on page 82 of February Gleanings, relative to different methods of wiring frames, should be well worth the price of a year's subscription to any beginners and many an old-time beekeeper as well, since sagged foundation with resultant drone-cells is all too common in most apiaries. A number of Ontario beekeepers use a method not described in the article at all, namely, simple vertical wiring without any crossing of wires in any place. The late Mr. McEvoy was enthusiastic as to this method, and all his frames were wired that way. We have wired hundreds that way and much prefer the vertical method to any other. Of course, the objections are that a heavier bottom-bar is needed, and it is difficult to pierce holes thru the thick top-bars. Mr. McEvoy used small staples driven in under the side of the top-bar to put wires thru, but we have always pierced the top-bars, believing that it is more rapid and makes a better job. Aside from bottom-bars being sprung up a bit sometimes, I still think the vertical plan is at least as good as many other plans given—indeed, much better than some of them.

I have recently been in correspondence with some southern breeders regarding the matter of getting some package bees sent in by mail, as some friends of mine wished me to get them a few. I find that the two-pound package when ready for mailing weighs about six pounds. While that weight is all right for the United States mails, it seems that four pounds is the limit for Canadian mails, hence the two-pound packages are not admissible to our post-office. I wonder if this is generally known. It seems too bad that there is no uniformity in the mailing system between the two countries, since daily interchange of mails on a large scale is in progress all the time.

Owing to exchange rates, express companies ask shippers to prepay express charges in United States money, and this factor, together with alleged poor service and high rates, has caused many shippers to send bees by express.

J. L. Byer.

Markham, Ontario.

## HEADS OF GRAIN FROM DIFFERENT FIELDS

**Mexican Palo-verde.** A species of palo-verde (*Par-kinsonia aculeata*), of which there are many trees on the university campus, blooms profusely in May and is much worked by bees. It seems certain that a considerable proportion of the first crop from the campus colonies was from this so-called "Mexican palo-verde," or "bogota;" but the honey was of good quality, in no way inferior to the rest of the mixed light amber honey of that period of the year, and superior to some of the local honey of other apiaries produced at the same time. This tree then appears to be a honey plant of no small importance where abundant, but it is a native of Mexico and extends into Arizona only a little way in the extreme Southwest, its natural range ending about 45-50 miles southwest of Tucson. It is doubtful whether any other apiary in America is so located as to be within reach of any number of these trees, and an effort to secure further data on the amount and character of its honey will be made.

Tucson, Ariz.

Chas. Vorhies.

**The Thirteen-Frame Hive.** Wanting to try out this unlucky 13-frame 20-inch square hive instead of waiting to learn from someone else's experience, I made 30 of these monsters 18 months ago. Last year being a poor year here in southern California, I could not give them a good trial, altho even then they gained over the 10-frame colonies in the orange flow. This year, however, I tested them out fairly and squarely. The square shape is one improvement over the 10-frame hive. Set the hive level on the stand for the summer and set each super on so the frames run cross-ways of each other. This does away with burr comb's being built solid between the supers. The second advantage is that one can space the frames to suit himself. With a 10-frame hive you must have eight thick combs in a super for extracting or nine thinner ones; and with nine in the super they are really too thin to uncup well, while with eight they are sometimes too far apart and the bees build too much comb up between them. But, with a 13-frame hive, 11 frames in the super work out well. The third advantage is less swarming, and the queen stays down below better. A 13-frame hive four supers high is better than a ten-frame hive with supers six high. And a hive three supers high or with two supers on the brood-nest is easier than a 10-frame four or five high. Fourth, there is also less lumber in a three-story 13-frame hive than in a four-story ten-frame hive, less paint, and the hive doesn't heat up so much.

Riverside, Cal.

Chas. S. Kinzie.

**Selling the Honey Crop.** The year of 1913 was our best season for honey production. Our crop was a trifle over 15,000 pounds, all extracted. About one-half was sold to commission men at a low price. Then I thought out something. I decided to advertise in a live-stock journal, which was a hit. The honey was put up in 60-lb. cans, two cans to a case, but most of it unsold in smaller lots. We gave away no samples, but charged 6c each for them. We also sent out an order blank. Since that time we have been selling to the consumer direct, not by advertising but on the city market, until the summer of 1920 found us so busy with our farm work (we have 86 acres) we were obliged to advertise in our county newspapers and sell at the apiary. The ad read: "For Sale—Delicious honey. Clover and fall flower blend, in 10-lb. pails, here at the yard 1½ miles N. E. of Lakeville, Ind., \$2.25 each. C. A. Bunch."

A small amount, perhaps 10 per cent, was shipped away in 10-lb. pails and 60-lb. square cans. Our honey was nearly all sold by Dec. 20. The cash received for the crop from 70 colonies increased to 86 was \$1690. About two tons, or half of our honey, was white honey which we sold the same as the blend, \$2.25 per pail of 10 lbs. It is reasonable to believe that many ears of honey could be sold direct to farmers and live-stock men at a good price, if the beekeepers would advertise in the farm papers.

Lakeville, Ind.

C. A. Bunch.

**Why Invalids Prefer Comb Honey.** In a recent Gleanings, in discussing why invalids should prefer comb honey,

John Preston True says:

"Isn't it quite likely that nature knew what she was about, and supplied the indigestible wax with the honey to compel chewing, thus giving the needed saliva for its right digestion. That's my guess."

There is no doubt that chewing wax does stimulate the action of the salivary glands and produce an abundant flow of saliva, which may assist to some slight extent; but I am sure this cannot be the reason for the difference in the physiological action.

I believe a better explanation of the phenomenon would be that those particles of indigestible wax, coming in contact with the intestinal walls, stimulate peristaltic action, that peculiar worm-like movement of the intestines by which their contents are forced out. In other words the indigestible wax in the alimentary canal assists in elimination. The extracted honey, with the addition of horn shavings, or any other indigestible substance, would get the same results as the wax in the comb honey.

Illmo, Mo.

R. G. Williams.



# HEADS OF GRAIN FROM DIFFERENT FIELDS

**Moth Larvae in Winter.** It might be of interest to those who have frames of honey or comb stored where it is warm enough for moths to exist, to examine them occasionally.

Several supers of frames of comb containing quite a little clover honey were sulphured and stored away for spring feeding, if found necessary. They were placed near the furnace in the cellar. Smelling the fresh honey quite fragrantly today, I was under the impression that perhaps mice had in some way gained admittance to the supers, but found instead quite a few moth millers and worms. Several frames had been cut up quite a little. Upon placing these frames out in the cold the worms and live millers be-

came cold and stiff and apparently dead. These frames will have to be sulphured again before being put in back in the cellar. I believe any who have frames stored under similar conditions, even if these had been previously treated to destroy moths, should examine them occasionally. These frames had been stored away from the cold to prevent the honey from candying. I do not remember having ever read of such an occurrence in any of our magazines, nor have I heard any verbal comment. Where did these moths come from, and how did they get in? The frames had been stored in the cellar all this time, and the moths had apparently been there only a week or so. A. H. Clagg.

Bellefontaine, O., Jan. 17, 1921.

## Bees in His Phonograph

"Truth is stranger than fiction," and bee stories are sometimes stranger than fish stories.

It was a wet and gloomy day in the fore part of August. The outdoors was not very inviting to either man or bees. Consequently my bees were hanging pretty close to their hives, and I was doing likewise to my shack. As evening began to enroach upon the day (like some beekeepers do upon another's territory) I began to feel melancholy.

No wonder, then, all alone in the wilderness as I was, that I turned to my phonograph for solace. There it was in the corner; at least there was the top of it peering above a conglomeration of Danz. supers, hive bodies, and Hoffman frames. Ten minutes'

work cleared this away and saw me drinking in the music as it poured forth from the latest records.

I leaned back in my chair and puffed contentment from my pipe. A new record, "When the Bees Are Makin' Honey," was beginning to grind. It wasn't very appropriate for the day, as I soon found out.

Ping, ping! First on the nose; then above the left eye; one on the right ear; two on the chin, and I lost count. It was a real live record, but the bees did not approve of it. Some day during the clover flow the little varmints must have swarmed in thru my open window and lodged in the sound box of my phonograph.

Lansing, Iowa.

Ben Kelleher.



Ben Kelleher Moved Out—Promptly.

**Q**UESTION.—I am about to purchase an apiary, but the bees are hybrids. Are they as good as Italians, and will they do as well under favorable conditions.

L. D. Strauss.  
California.

**Answer.**—If the colonies are in good condition and free from disease, you need not hesitate about purchasing this apiary because the bees are hybrids. So far as honey-gathering is concerned these hybrids may be either poorer or better than Italians and unless they are now several generations from the first cross there will probably not be much difference in honey-gathering qualities between these hybrids and pure Italians. After several generations, however, they may deteriorate rapidly. The greatest danger is in their poor resistance to European foul brood, and before purchasing them you should examine them carefully to see if this disease is present. In California this month is a good time to look for the disease, for it is usually at its worst during the heaviest brood-rearing in the spring. If the colonies should be found badly infected with European foul brood at this time of the year, of course they may not be worth much. If you purchase these bees it will be well for you to Italianize them this season, if for no other reason than as a precaution against European foul brood.

#### RENT FOR OUT-APIARIES.

**Question.**—What is the usual custom in paying for the privilege of placing colonies of bees on another's property, as in establishing out-apiaries?  
Connecticut. G. B. Chase.

**Answer.**—This will vary according to circumstances. In some cases, fruit-growers are not only willing to furnish a location for the out-apiary without charge, but are willing in addition to pay the beekeeper a fixed sum on account of the benefit from the bees in better pollination of the fruit. On the other hand, beekeepers in the West sometimes pay as high as \$50 to \$100 for the exclusive right to locate an apiary on a large ranch where alfalfa is grown extensively. Probably a fair price for a good location is \$10 to \$15 per year, with a little honey thrown in. In any case the out-apiary should be located some distance away from the farm house and away from cultivated fields if possible, preferably on pasture land. The beekeeper should take special care not to leave gates open or permit the presence of the bees on the farm to annoy the owner of the farm in any way.

#### SPREADING BROOD AND STIMULATIVE FEEDING.

**Question.**—Which plan is best, spreading the brood and stimulative feeding, or the "rich in honey" plan for spring management?  
Pennsylvania. Charles B. Bickel.

**Answer.**—Spreading the combs of brood apart and inserting empty combs taken from

## GLEANED BY ASKING

Editors

the outside of the hive was advocated by some leading beekeepers 25 or 30 years ago, but the practice has been almost completely abandoned by com-

mercial honey-producers. In the hands of the inexperienced it is a dangerous procedure, and in the hands of the expert it is of doubtful value. About the only time that it pays to do this is when a colony becomes "honey-bound" in the spring so the queen is unable to expand the brood-nest on account of a barrier of honey. Sometimes poor combs or pollen-clogged combs may become barriers in the way of the expansion of the brood area. In such cases a safe way is to take away this barrier and insert an empty comb adjacent to the outside frame of brood instead of in the middle of the brood-nest.

In regard to stimulative feeding, this, too, is not practiced now as much as formerly, since in most cases, especially in the eastern portion of the United States, but little is gained in brood-rearing by stimulative feeding over the presence of an abundance of honey in the hives. The inclination to rear brood extensively is very strong in the spring, and usually if the bees have plenty of honey they need no additional urging to do their best. There are some exceptions to this in the West, in which beekeepers sometimes break down the cappings of sealed honey or transpose combs of honey to the lower hive-body to induce the bees to move some of the honey to stimulate brood-rearing. When stimulative feeding is practiced it should not be begun until three or four weeks previous to the beginning of the honey flow, and should be continued until the beginning of the honey flow if no honey is coming in from minor sources.

#### SHALLOW SUPERS FOR BROOD-REARING.

**Questions.**—(1) Will a shallow extracting super provide enough extra space for spring brood-rearing when using the ten-frame hive? (2) Should the queen be allowed this extra breeding space all the season or should the excluder be put on the lower hive-body?  
Iowa. R. H. Grell.

**Answers.**—(1) If a shallow extracting super is used in addition to ten good combs in the regular brood-chamber, these combs having good worker-cells practically to the top-bar so that almost the entire comb can be used for brood-rearing, there should be sufficient brood-rearing space for the most prolific queens even when the shallow extracting super is partly filled with honey. The 10 Langstroth frames, if free from honey, contain nearly 70,000 cells for brood if the combs are nearly perfect, but in practice this much brood is probably never found in a regular 10-frame hive. (2) It is better to confine the queen to the lower hive-body soon after the beginning of the main honey



flow in order to have the shallow extracting super well filled with honey at the close of the season to insure plenty of stores for the colony.

#### FROST IN ENTRANCE.

Question.—This morning the  $\frac{3}{8}$ -inch entrance hole of one of the colonies in a double winter case was nearly closed with frost. There was just a little hole about  $\frac{1}{8}$  inch in diameter that remained open. What does this frost indicate?

New York.

Cordelia Timmerman.

Answer.—This frost in the entrance indicates that the moisture given off by the bees is passing out of the hive thru the entrance in the form of vapor. The warmer air within the hive has a greater capacity for moisture than the colder air outside. The moisture can be held in vapor form until it becomes chilled at the entrance when some of it condenses and frost is formed. Frost in the entrance would indicate that your hives are well packed, for otherwise it would be formed inside the hive.

#### CONFINING BEES IN CELLAR.

Question.—I have cages on the hives in the cellar, and at present several colonies are raging and roaring, seeming to want to get out. They cluster outside in the cages and fill them tho the temperature in the cellar is 40 degrees. What do you think makes them act so and what would you do?

South Dakota.

E. O. Mashamer.

Answer.—When bees are confined to their hives they may be expected to become restless and try to find some way to get out. As long as the bees do not realize that they can not escape, they may remain quiet; but, when some of the old worn-out bees attempt to leave the hive and find that they can not do so, the colony becomes greatly disturbed and many bees rush out into the cage in their attempt to escape. If the cage were larger or the colony weaker, there would be less trouble, but it is not best to try to confine bees to their hives in this way. The cages should be removed at once, and, if the disturbance has not been of too long standing, the bees may quiet down again. If the stores are good and the cellar temperature is right, only those bees that are too old to be of any further use to the colony should leave the hives during the winter, and it is better to leave the entrances open so these old bees can escape.

#### USE OF POLLEN.

Question.—What is the value of pollen to bees? Louisiana.

G. D. Verchee.

Answer.—Pollen is used by the nurse bees in elaborating the larval food, and may be used to some extent by other adult bees. Pollen contains the tissue-building elements and is therefore needed in the growth of larvae, while honey contains energy-producing elements. Without pollen brood-rearing would not be possible, and it may be important as a small part of the food for adult bees, but they cannot live on pollen alone.

#### ADVANTAGE OF TWO-STORY HIVE.

Question.—What are the advantages of using the 10-frame hive two stories high? Montana.

R. C.

Answer.—A second story for brood-rear-

ing is advantageous in the spring, since a single story may not be large enough for the full development of strong colonies. The second story should contain an abundance of honey to insure extensive brood-rearing and at the same time supply additional room for the most prolific queens. In your climate it may be better to reduce your colonies to a single brood-chamber for winter, then give the second hive-body supplied with honey and some empty comb when these are needed in the spring. When producing extracted honey, by permitting the queen to have free range of two brood-chambers previous to the honey flow the tendency to swarm is greatly reduced. Later the queen should be confined to the lower hive-body.

#### BEES ON SHARES.

Question.—Within a radius of four miles there are three or four men who have asked me to take care of their bees. Will you please tell me what would be a fair share of the honey and increase, the owner paying for all the supplies?

Ohio.

S. C. Botdorf.

Answer.—Usually in such cases the owner and the beekeeper divide the marketable honey and wax equally, and share equally the expense for containers when extracted honey is produced, and for sections, foundation, and shipping cases when comb honey is produced. Increase, if any, usually belongs to the owner. If no surplus honey is secured, the owner usually agrees to pay the beekeeper a sum previously agreed upon. If feeding becomes necessary, the owner provides the sugar for this purpose, the beekeeper doing the feeding.

#### SENDING SAMPLES OF BROOD DISEASE.

Question.—Where and how can I ship comb for examination for foul brood? If by mail, how should it be packed? Pennsylvania.

R. M. Hamilton.

Answer.—Samples of comb in which one of the brood diseases is suspected should be sent for diagnosis to the Bureau of Entomology, Division of Bee Culture, Washington, D. C. These samples should be sent by mail, packed in a small wooden box. An empty cigar box will do very well for this purpose. The comb should not be wrapped, but should simply be fitted into the box. Tin cans or tin boxes should not be used for sending samples, since the comb is liable to become mouldy if sent in tight containers, thus rendering them unfit for diagnosis. In selecting the sample to be sent, choose that portion of the comb which contains the greatest number of dead larvae or pupae and cut out a piece to fit the box. No honey should be included in the sample, since this would, in all probability, leak out and damage other mail matter. A small wooden box for mailing samples of diseased brood may be had by writing to the Bureau of Entomology at Washington. Great care should be taken when preparing samples of diseased brood in this way, to prevent any bees having access to them, thus spreading the disease to other colonies.

IN the southern States the beginner who is able to purchase colonies of bees locally has probably already come into possession of his colonies and moved them home. When full colonies are purchased locally they should be moved early in the spring before they become very populous and before warm weather, for there is less danger of injuring them at that time. The bees should be brought home not later than some time this month in most parts of the South, and not later than about the first of May in the North. If the bees can not be purchased locally and it becomes necessary to purchase them from a distance thru a dealer, they will, of course, not be shipped until later.

The beekeeper from whom the colonies are purchased should prepare them for transportation by closing the entrance with a wire screen and by fastening the bottom and cover to the hive so no bees can escape. The hives should be closed, either in the evening after they have all returned from the fields or during a day when it is too cold or rainy for them to fly; otherwise some of the workers would be left behind when the colony is moved away, and at this season it is important that none be lost, for these bees have the important responsibility of raising the great horde of workers which should be ready to harvest a crop of honey later when the flowers begin to yield nectar in abundance. It has been estimated that for each worker bee in the hive in the early spring there should be at least five young bees reared within less than two months. So the loss of one worker (at that time) may mean a reduction of five workers when the real work of the season begins.

#### Location of the Hives.

If the bees are to be kept in a village or city lot, there is usually an out-of-the-way nook somewhere in the back yard or garden which may be dedicated to the bees. If on a farm, the bees can usually be located in a corner of the orchard. The city dweller may find it necessary to place his colonies in the attic of his dwelling, which can be done by providing an opening in the siding thru which the bees may pass from the entrance of the hive.

While the hives may be located near a path or near the back door usually without the bees molesting persons passing by, it is much better to locate them some distance away where there is less chance of trouble. In this connection it should be mentioned that some strains of bees are much more inclined to sting than others, and those who keep bees on small lots in villages and cities where they may molest the neighbors should,

## TALKS TO BEGINNERS

By the Editor

if possible, keep only a gentle strain of Italian bees.

Wherever the bees are located the hives should be sheltered from cold winds by a fence,

bushes, buildings, or any kind of protection that may be available. While a shady nook may be advantageous during the heat of the day, the hives should not be located where they will be in the shade thruout the entire day. It is usually better to have the hives in the full sunshine during the spring, and when shade is needed later they can be covered with wide boards to protect them from the hot sun.

Most beekeepers prefer to have the entrances of the hives either toward the south, southeast, or east; but if well protected from cold winds, this is not essential. A southern or southeastern slope is better than a northern or western slope for the location of an apiary.

The hives may be placed upon four bricks, wooden blocks, or upon the regular hive stands made by nailing together four narrow boards to form a rim from three to six inches high. This is to raise the floor of the hive off the ground to keep it dry. The hives should be level from side to side, or crosswise of the combs, but should be tipped slightly forward to prevent water from standing on the floor after a driving rain.

As soon as the bees are brought home and the hives are located where they are to remain permanently the screen which closes the entrance should be removed. The beginner may think, since the bees have been moved home during the night or on a day too cold for them to fly, that the entrance need not be opened until the next day, but it will be better to do this as soon as possible.

#### How Many Colonies for Beginners?

The advice usually given to beginners is to start with one or two colonies and build up the number as experience is acquired. The reason for this is that it takes time to learn the trick of handling the bees and also to work out a system of management best suited to the particular locality. While much can be learned from a season's management of a single colony, two or three colonies would be better; and there is no reason why the ambitious beginner should not start with a dozen or more colonies, if he has plenty of enthusiasm and a little time to devote to the bees.

#### The Modern Beehive and Its Parts.

There are so many things which the beginner should be told on these pages before June that it would be folly to use precious space here to describe and illustrate the modern beehive, when this has already been



so well done in the catalogs put out by dealers in beekeepers' supplies. The beginner will find in the catalog illustrations of the modern beehive partially dissected, showing the various parts of the hive, and giving the name of each part; and on the same pages will be found explanatory notes, telling the purpose of each of the parts. These should be studied carefully, for a correct understanding of the modern beehive, its parts, their purpose and relative position is of great importance to beginners. This is true also as to all the apparatus used by beekeepers, for these are well illustrated and described in the catalogs which can be had for the asking by writing to any dealer in beekeepers' supplies. By consulting the advertising pages of this journal the address of the leading dealers in bee supplies can be found.

It is not necessary for the beginner to purchase many of the articles listed in the catalog of the supply dealer; but certain additional equipment is necessary unless it was purchased with the bees. These should be obtained without delay, for if they must be ordered from a distance it will take some time for them to be shipped and assembled ready for use.

#### Comb Honey or Extracted Honey.

If the "supers" were not included with the equipment when the bees were purchased it will be necessary to provide from one to four of these for each colony (spring count). These supers are the extra chambers which are placed on top of the hive for the storage of the "surplus" honey. The kind of supers to be provided depends upon the kind of honey that is to be produced—whether comb honey or extracted honey. Comb honey is usually built in the small boxes or sections in the regular comb-honey super, tho for home use it may be built in the shallow frames in a shallow extracting super. Extracted honey is stored by the bees either in the combs of the shallow extracting super or full-depth combs of the same dimensions as the combs in the brood-chamber. These combs of honey are removed and the honey extracted by means of the honey-extractor, and finally they are returned to the bees to be filled again.

Most beginners produce comb honey at first in order to avoid purchasing an extractor the first year; but comb-honey production is really a more difficult undertaking than extracted-honey production because of the greater trouble from swarming and the greater difficulty in inducing the bees to work in the supers with the greatest vigor. More extracted honey can be produced from each colony than comb honey—usually, in the case of beginners, twice as much. On the other hand, comb-honey production is more fascinating to most beginners, and experience is usually gained much more rapidly when comb honey is produced. In addition to this, in most localities the

colonies are in better condition at the close of the season when comb honey is produced.

#### Chunk Comb Honey for Home Use.

If the honey is for home use, it is not necessary to have it stored in the small boxes or sections as when the honey is to be sold in the markets, and for this purpose the shallow extracting supers are excellent. The bees usually work better in these shallow extracting supers than they do in the small boxes of the comb-honey supers. After the shallow extracting frames are filled with honey the combs can be cut out as the honey is used and the frames used over again the next year, while the sections are usually used but once.

In some of the southern States considerable honey is produced for the market in this way, the combs of honey being cut out of the frames and packed in tin containers for the market. This plan has the further advantage that the same supers may be used for extracted honey, if it is found desirable later to change to extracted-honey production. In producing this chunk honey, the wires are omitted from the shallow frames in the supers, but a full sheet of a light grade of foundation should be used in each frame.

Whatever the kind of honey to be produced, whether comb honey in sections, chunk comb honey in shallow extracting frames, or extracted honey in the full-depth frames, the beginner should provide from two to four comb-honey supers for each colony in the spring, or one or two full-depth extracting supers, if extracted honey is to be produced. In some seasons double this number of supers will be needed, and it is better to have too many than too few. Full sheets of foundation should be used in all sections and all extracting frames, the particular grade of foundation for each purpose being specified in the bee-supply dealer's catalog.

#### Additional Equipment.

In addition to the supers the beginner may need some one-story hives for new swarms, especially if comb honey is to be produced, but never more than one new hive for each colony (spring count), and one new hive for every two colonies (spring count) should be enough.

If extracted honey is to be produced a queen-excluder will be needed for each colony to exclude the queen from the supers, but queen-excluders are not needed when comb honey in sections is being produced.

In addition to the hives and supers a good smoker and a bee-veil are absolutely necessary for the beginner as well as for the professional beekeeper. A pair of good bee-gloves will afford a timid beginner great comfort, and some sort of hive-tool will be needed. It is assumed that the necessary books and bulletins have already been procured.

THE West Virginia Beekeepers' Association will hold a meeting at Charleston, West Virginia, on March 25-26. Editor Geo. S. Demuth is expecting to attend. Further particulars in regard to this meeting may be had by writing to the Secretary, Will C. Griffith, Elm Grove, West Va.

\* \* \*

The South Dakota Beekeepers' Association will hold its next meeting at Vermilion, S. D., on March 8 and 9. L. A. Syverud of Yankton, S. D., is secretary of this association.

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The British Bee Journal reports the value of honey imported into the United Kingdom during the month of December, 1920, as £10,333, from a return furnished by the Statistical office, H. M. Customs.

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The Beekeepers Item comes out in a new dress for 1921, having changed to magazine form and added a cover. It is now a 32-page magazine and is filled with good matter. The price has been increased to \$1.00 per year.

\* \* \*

The 32nd annual meeting of the California State Beekeepers' Association will be held at Oakland, Cal., March 2, 3, 4, 5. An elaborate program is being prepared for this meeting and a long list of notables are listed as speakers. Editor E. R. Root is expected to attend this meeting.

\* \* \*

A meeting of the Montana State Beekeepers' Association was held at Billings, Mont., on Jan. 25-26. The big feature of this meeting was a discussion of the proposed foul brood law for the State, which was introduced in the Legislature immediately after the close of the meeting.

\* \* \*

The annual meeting of the Southern Minnesota and Western Wisconsin Beekeepers' Association will be held in the courthouse at Winona, Minn., on Thursday and Friday, March 3 and 4. An excellent program of papers and talks on live subjects has been arranged for this meeting. Ozra S. Holland of Winona is secretary of this association.

\* \* \*

An insect, which for some years has been known to occur in the citrus groves of India, has recently appeared in Cuba, the Panama Canal Zone, the Republic of Panama, and Costa Rica. There is danger, according to the Bureau of Entomology, United States Department of Agriculture, that the black fly, *aleurocanthus woglumi*, may invade the United States from these New World colonies, but careful investigations conducted



by the bureau specialists in the Canal Zone fail to disclose any citrus trees that have been killed by it. The Canal Zone has peculiar climatic conditions, however, which may limit the ravages of the new pest, and it is possible that it will add a heavy burden to the citrus grower if it becomes established in the United States.

\* \* \*

The Department of Agriculture Bill now being considered by the State Legislature of Michigan, if passed, will take the bee-inspection service of that State out of the hands of the university and put it directly under the control of the governor. From this distance, at least, this change looks like a step backward for the inspection service of Michigan.

\* \* \*

The report of the State Inspector of Apiaries of the State of Utah for 1920 contains an estimate of the honey produced in that State in 1920. The data are given by counties and from a total of 39,131 colonies 3,002,245 pounds of honey was produced, this being an average of about 76 pounds per colony. Ten per cent of this was comb honey, and 90 per cent extracted honey. Duchesne County, with 7,101 colonies, shows the highest average yield per colony, as well as the greatest number of colonies, the average yield being 120 pounds per colony.

\* \* \*

At Auburn, Me., on Feb. 15, the Maine State Beekeepers' Association was organized. Lester W. Longfellow, Hallowell, Me., was elected president, and F. L. Mason, Mechanic Falls, was elected secretary. The immediate object of the association is that there may be an organized effort in support of a foul brood law to come before this session of the legislature. The first annual meeting of the new State Association will be on March 30 at Orono. Dr. E. F. Phillips of the Bureau of Entomology is scheduled as one of the speakers at this meeting.

\* \* \*

Two short courses for beekeepers were given by the United States Bureau of Entomology, one in co-operation with the Ohio State University at Columbus, O., Jan. 31 to Feb. 4, and the other in co-operation with the New York State College of Agriculture at Ithaca, N. Y. Both were well attended and great interest was manifested. Dr. E. F. Phillips of the Bureau of Entomology carried his usual course of lectures thruout the week in each of these schools. His work was supplemented by other speakers, whose topics were chosen to fit in with the main series of lectures. It is to be regretted that more of these short courses could not be given during the winter.



THE season just closed has been an educational one and bees in our locality are in better shape than they have been for years: the assistance of our local Deputy Inspector of Apiaries, Mr. Logan, and instructive articles in *Gleanings* and *American Bee Journal*, as well as the hearty co-operation of local beekeepers, made it possible for our bees being in such fine shape this fall."—Alten L. Logan, Madison County, Ills.

"In a recent conversation with a bee-supply dealer who covers Michigan territory he said that his business in tin cans of an average size of five pounds had increased to 40 times what it was ten years ago, and that most of that increase has been very recently. It shows that Michigan beekeepers are making themselves independent of the wholesale market by cultivating a private trade. This is the most hopeful sign of progress that we have seen for some time."—B. F. Kindig, Ingham County, Mich.

"In the February *Gleanings*, J. E. Crane wants to know if any one has melted the cappings from the wax press described by Mr. Holtermann. I made a press with a two-inch screw and use an iron bar for turning down. I use a solar wax-extractor and get equal pounds of wax and honey from a 20 to 25 pound cheese. It would not vary more than a pound either way."—Fred P. Jansen, Montgomery County, N. Y.

"A man at Glen Summit Springs, Pa., having occasion to remove a bottom-board from one of his hives, noticed a mound of wax, and upon breaking it open a little discovered a dead mouse in it. The mouse in its efforts to escape had probably stirred up the bees, which stung it to death; and in order to prevent the odor from the dead mouse contaminating the hive and honey they had hermetically sealed it in."—Albert Williams, Jr., Luzerne County, Pa.

"Temperature has been just too cool for the bees to have a good flight for several weeks. Today (Feb. 14) they are bringing in pollen from maple."—O. Bromfield, Jefferson County, Ky.

"State Bee Specialist C. L. Sams says there are good prospects for an exceptionally large amount of transference of the bees this spring from gum and box hives to the Standard hives. He is finding a steady growth in interest among the beekeepers of the old-fashion sort. While many are 'sot in their ways' and are not turning readily to the improved methods, their eyes are being opened by demonstrations all about them and they are being forced to admit that the 'new-fangled' methods are the best."—W. J. Martin, New Hanover County, N. C.

## BEES, MEN AND THINGS

(You may find it here)

"The weather in this portion of the State, Mills County, has been extremely mild so far, and bees are in excellent condition. I examined a por-

tion of my apiary and found brood-rearing coming on nicely. I found plenty of sealed brood and eggs and young bees just emerging from the cells. They have plenty of stores of sealed honey of fine quality. The bees are far above the average of this time last year in this section. The prospects for a good honey flow are excellent for the coming season."—John W. Hendrick, Mills County, Texas.

"About 10 years ago there were in the whole island no more than 200 commercial beehives and a few wild colonies. The production per colony was much more than a barrel (50 gallons), and the swarming was something to worry about. The native blacks were of two kinds, one big and rather tame, and the other fierce and very small. There were also a small variety that looked like degenerated Italians and were intolerably fierce and very small. The superiority of the Italians was remarkably shown some years afterwards by the complete disappearance of all wild bees. Today, on account of the high prices of honey and competition, everybody tries to make the bees produce honey to the limit by extracting as much as possible even in the brood-chamber, not worrying about a possible death by starvation. This close extracting, the introduction of pure American-Italian stock and the superabundance of bees everywhere, all combined, help to produce almost non-swarming colonies."—C. Vives-Bazan, Porto Rico.

"Bill Mellvir. Dear Bill: I read with real dismay what trials you had Convention Day. And all because old Jimmy Jones became so drunk on his own tones he would not stop for sigh nor tear, and you—you turned the other ear! I'm sorry, Bill, as I can be, you couldn't come to Tennessee; for it would do your sick soul good to see how speakers rose and stood and said their say and sat down quick—'twas that time-limit turned the trick, all printed out in minutes, five, fifteen or ten—and Man Alive!—they poured out wisdom, plan and text before 'twas time to holler Next! And there was question and debate, and still the program held its gait. "Speak and let speak!" this rule de-thrones convention tyrants like Jim Jones, and gives a modest man like Jinks a chance to tell folks what he thinks of getting honey by the ton and maybe tell 'em how it's done. But Bill, come down to Tennessee—choose any subject, so it's bee; behavior, packing, nectar-flowers—and you shall talk two solid hours! Grace Allen.

Nashville, Tenn.

# NOTES OF TRAVEL

A. I. Root

When we started out, I suggested we could make pretty near 200 miles a day, but Huber said altho I might make it the first day, the next I would be pretty nearly used up, especially for a man over 80. Well, I rode about 1800 miles in 13 days' travel, and felt better the last day than I did the first, and *gained 8 pounds in weight*. As we had unusually cold, and sometimes stormy weather, the little stove, described on page 754 of December Gleanings, proved a little gem indeed. I don't think I could have kept warm without it. Below I am going to submit notes to Mrs. Root on postal cards:

Raleigh, N. C., Nov. 13.—We have just visited Mr. C. L. Sams, employed by the State and the United States to develop bee culture. His wife wanted to meet the author of the "Home Papers." She and her four daughters sang, "From Sinking Sand, *He* lifted me" (violin and piano), and it "lifted me. "Surely goodness and mercy will follow me all the days of my life," etc.

Camden, S. C., Nov. 15.—Last night we stopped at a rather fine hotel, where they *never lock a door* on the premises, and they don't have things stolen, not even an automobile (?).

Live Oak, Fla., Nov. 18.—Between Augusta and Macon, Ga., we saw *miles* of peach orchards, some of them in very fine condition. Frost enough to kill sweet potatoes.

Palatka, Nov. 20.—We had a most pleasant visit with Profs. Rolfs and Newell at Gainesville Experiment Station. Ernest had so many points to compare, we could hardly get away. They have about the prettiest little apiary I ever saw right in a thick, dense wood. It has been so cold until today that I have worn my sweater every minute. I am getting very anxious to reach "home," and get to work.

Crescent City, Nov. 21.—We attended church and Sunday school in Palatka, and this afternoon passed thru Huntington and stopped about an hour to look over our 160 acres. Huntington has run down, and seems almost deserted, but there are some of the finest Florida residences I ever saw *near* there, and also some of the finest orange groves.

Lakeland, Nov. 23.—We have been thru some of the most beautiful and largest lettuce farms near Hastings I ever saw, and just *miles* of orange trees loaded with fruit. We are only 25 miles from Tampa, and expect to be "home" tonight. Yesterday I was up at 15 minutes of 5 and had *no nap at all* until 7 p. m.

"Out in the wilderness," somewhere near the line between Georgia and Florida, I saw a little tree close by the roadside loaded with most beautiful, luscious-looking fruit. We stopped, and behold, it was wild persimmons, "wasting their sweetness

on the desert air." I began eating until Ernest demanded a stop. You see he had "contracted" to "deliver me" at our Florida home sound and well. I wanted to load a lot in the "Dodge," but he declared we had no time to spare before night. The delicious fruit hung so low it could be easily picked from the ground, and was close up to a well-traveled highway. I would like to ask my good friend Reasoner and other nurserymen why something more is not done to develop and disseminate some of the best of our wild persimmons growing more or less from Missouri to Georgia.

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## ELECTRIC WINDMILLS.

This is the third winter we have lighted our home and run our electric auto by wind power, and there has heretofore been very little trouble from lack of wind; but just now (Jan. 12) we have had much less wind than during the two previous winters. To increase our luck, the evening that Ernest and I arrived, of course, I had to "trot out" the new electric devices. The heater was one of the things exhibited, and, altho no heat was needed, the plug was put in to show how quickly it would be red-hot, and then pushed back under the table and forgotten. After thirteen hours my 16-cell house batteries were down to the last limit. From that time to this, we haven't had enough wind to run the auto at its best, and light the house fully. Now for lighting the home and other light work the outfit made by the Wind Electric Corporation, Wyndmere, North Dakota, is all right; but, if you want to run an electric auto also, in most localities, there should be current available from some other source when there happens to be several days with no wind. A very cheap outfit would do all right for those rare times when the wind doesn't happen to blow for several days at a time.

Using electricity to produce *heat*, takes much more current than for light or mechanical work, and where used for cooking or warming current should be promptly cut off just as quickly as it can possibly be dispensed with. Even running an auto does not pull down the current, like the little heater I have mentioned. We use the auto for 5 to 10 miles almost every day, and, of course, the current used depends on the load carried.

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## BEE CULTURE IN ITALY.

Inasmuch as our Italian bees are proving to be such a help not only to America, but perhaps to the whole wide world, it is a little strange that we have never heard very much in regard to what the Italian bees do



in their native home. The inclosed clipping from the Cleveland Plain Dealer, in view of this, should be interesting:

**BEEES TO AID SUGAR LACK.**

**ITALY GIVES RAIL EMPLOYEES UNIQUE JOB.**

ROME.—Italy is devising means to alleviate the beet sugar shortage. She has been urged to put more bees at work producing honey.

Italy in 1917 had only 67,000 miles of railways, and at regular intervals along the lines are little houses where the railway employes, signalmen, track walkers, and repairmen live. The manager of the National Institute for Agrarian Assistance recently recommended that they each be given a hive of bees.

In conformity with the suggestion the experiment is to be begun at once on the lines in the province of Rome; and, if successful, it will be extended to all the railways of Italy.

The above, if carried out, will certainly result in a tremendous boost to bee culture in Italy. If we knew how many miles apart these stations were to be, we could tell a little better how many bees it would take to cover the whole 67,000 miles. I find we have now only eight subscribers in Italy. Can not one or more of these eight subscribers tell us a little more about it? And, by the way, can not the suggestion be carried out, more or less, here, in our own country? If each one of our thousand railway stations, say in country places and the little towns, were once started in bee culture, it might result in saving many tons of nature's sweets.

**A. I. ROOT AS HIS DAUGHTER SEES HIM.**

The Farm Journal for January, on its page of "Workers and Work," published an article "unbeknownst" to Mr. A. I. Root, under these headlines: "One of the Farm Journal's Oldest Friends, Amos I. Root, the Bee Man." The author was his daughter, Mrs. Constance Root Boyden—in the old days her father's "Blue Eyes." The editor of Gleanings makes bold to publish this well-done sketch of the father without consulting either the subject or the author of it. Here it is:

"My father might be described as a man who has never been without a hobby. Perhaps this explains why at eighty years of age he is mentally keen and has the enthusiasm and zest for life of a boy, altho always he has been handicapped by a frail constitution which necessitated his husbanding his health.

"When only sixteen his hobby was electricity, and he even went about giving lectures on what was then a little understood subject. Later when he had a growing busi-

ness as manufacturing jeweler, he happened to notice a swarm of bees going overhead, and paid a workman a small sum to capture them for him.

"That little incident altered the course of his whole life, and shaped the lives of all his descendants to the third generation. From that time on bees became his hobby, and he gave all his spare time to their study. Since the books of that period did not give him all the information he wished, he studied his pets at first hand to such purpose that he afterward wrote the well-known "A B C of Bee Culture."

"But electricity and bees were by no means his only hobbies. He was one of the first keenly interested in aviation, being a confidant and friend of the Wright Brothers when they were making their first secret attempts at flying.

"And he has had a lifelong love for out-of-door work and "seeing things grow," both in his garden and chicken yard. You will notice I use the expression "out-of-door work." If father ever deliberately started out to play, I never knew it. He would probably not know a golf stick from a tennis racquet, nor has he any first-hand acquaintance with a fish-pole or gun. And yet, I am not sure but that he has taken more recreation than any other man I know. You see much of his work is recreation because he works along the lines of his hobbies. He can extract more pleasure from a combination of hoe, garden soil, and growing crops than other men can find on ideal links with the most expensive golf sticks.

"His latest hobby is to generate electricity by wind power. By windmills, at his little Florida home, he charges storage batteries and thus runs a little electric runabout and lights his house. He likes to mystify small boys by telling them his automobile runs by wind.

"Although father's life-work has seemed guided by his hobbies, there is a dominating principle over all, and that is, and always has been, his great desire to serve humanity.

"Here is a rather strange fact about father; he has never been employed by any other man, not even for one day.

"Now, at eighty years age, father is a busy, happy optimist."

Mr. A. I. Root.

I have just read your Home Department in August Gleanings, and I want to let you know how much I value it. As I am a beekeeper I read Gleanings from the front cover to the back, but your department comes first with me. I consider your department worth more than Gleanings cost. Let them that want to criticise, do so; but remember that you are doing God's work, and that there are far more that appreciate it than there are that criticise.

EUGENE HOLLOWAY.

Marietta, Okla., Aug. 3, 1920.

## Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

### REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Western Honey Producers, Joe C. Weaver, A. S. Tedman, R. V. Stearns, Seward P. Stanley, Geo. M. Sowarby, Chas. Sharp, J. Ford Sempers, W. T. Perdue & Sons, H. S. Ostrander, L. C. Mayeux, Michigan Honey Producers, J. E. Harris, Jas. Hanke, H. B. Gable, Jes Dalton, J. H. Corwin, Colo. Honey Prod. Asso., Albert Borning, J. D. Beals, Woodlawn Nurseries, Heller Bros., Progress Nurseries, Pullford Co.

### HONEY AND WAX FOR SALE.

FOR SALE—Honey in 5 and 60 pound cans. Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Clover and buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Choice clover-basswood blend honey in new 60-lb. cans. J. N. Harris, St. Louis, Mich.

FOR SALE—25 barrels, amber extracted honey, 12½c per pound. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Choice white clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

FOR SALE—White-clover comb honey. Fancy. 800, No. 1, 1.775. W. L. Ritter, Genoa, Ills.

FOR SALE—Finest-quality extracted buckwheat honey in 60-lb. cans. Chas. Sharp, Romulus, N. Y.

TWENTY-FIVE cases clover-basswood blend, new 60-lb. cans, two in case. Sample 20c. W. B. Crane, McComb, Ohio.

FOR SALE—A No. 1 white-clover extracted honey in 60-lb. cans, 2 cans per case. State how much you can use and I will quote on same. L. S. Griggs, 711 Avon St., Flint, Mich.

FOR SALE—White clover honey, almost water white. Put up in new 60-lb. tin cans, two to the case. Write for prices. D. R. Townsend, Northstar, Mich.

FOR SALE—Finest Michigan raspberry, basswood, and clover honey in 60-lb. cans, 20c per pound. Heartsease, aster, 18c. Free sample. W. A. Latshaw Co., Clarion, Mich.

FOR SALE—White honey in 60-lb. cans, sample and price on request. Also white clover comb, 24 sections to case. The A. I. Root Co., Inc., 23 Leonard St., New York City.

FOR SALE—10,000 lbs. A1 quality white sweet clover honey, in new 60-lb. cans. Will sell in quantities to suit. Sample free. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—White honey, 15c a lb.; L. A. alfalfa, 14c, in two 60-lb. cans; Chilian in 165-lb. kegs, 10c; light amber honey in 50-gal. bbls., 85c a gal. Beeswax, 30c a lb. Walter C. Morris, 105 Hudson St., New York City.

FOR SALE—Choice white-clover extracted honey, \$20.00 per case of two 60-lb. cans f. o. b. Holgate. Noah Bordner, Holgate, Ohio.

FOR SALE—Well-ripened, thick and rich white-aster honey in 120-lb. cases at 18c f. o. b. Brooksville, Ky. Sample 25c. H. C. Lee, Brooksville, Ky.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample, 20c, same to apply on first order. David Running, Filion, Mich.

FOR SALE—2000 lbs. Lancaster County best clover honey. None better. In packages to suit. Beeswax; also grafting wax. W. O. Hershey, Landisville, Pa.

FOR SALE—Choice clover extracted honey in 60-lb. cans, \$20.00 per case of two cans. Write for prices on large quantities, 50 cases of No. 1 comb honey. J. D. Beals, Oto, Iowa.

FOR SALE—3000 lbs. of well-ripened clover honey at 20c per lb.; 12,000 lbs. of No. 1 white aster honey at 15c per lb., put up in 60-lb. cans f. o. b. Brooksville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Well-ripened extracted clover honey, 20c per pound; buckwheat and dark amber, 17c, two 60-lb. cans to case. Clover in 5-lb. pails, \$1.25 per pail; buckwheat and amber, \$1.00 per pail, packed 12 pails to case, or 30 to 50 pails to barrel. H. G. Quirin, Bellevue, Ohio.

HONEY FOR SALE—Immediate shipment f. o. b. N. Y., Calif. white orange, 60-lb. tins, 19c lb.; Calif. white sage, 60-lb. tins, 16c lb.; white sweet clover, 60-lb. tins, 14c lb.; Calif. L. A. sage, 60-lb. tins, 13c lb.; West Indian L. A., 60-lb. tins, 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—Clover extracted honey of unsurpassed quality; new cans and cases, prompt shipment. You will be pleased with "Townsend's quality" extracted honey. Not a single pound extracted until long after the flow was over; thus the quality. Would advise intending purchasers to order early, as we have only a half crop. Address with remittance. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Delicious raspberry-basswood-milkweed honey by parcel post or express, nicely crated. 5-lb. pail, \$1.25; 10-lb., \$2.40, and 60-lb. can, \$12.00, f. o. b. here. Honey is liquid and put up with same care as bottled goods. Write for prices of pails in quantity lots or granulated honey in 60-lb. cans. Sample, 10c. P. W. Sowinski, Bellaire, Mich.

### HONEY AND WAX WANTED.

BEEWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Beeswax, also old combs and cappings to render on shares. F. J. Rettig, Wabash, Ind.

BEEWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slungum. Send for our terms and our new 1921 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Illinois.



**WANTED**—Well-ripened white-clover extracted honey. Mention how packed and quote price, f. o. b. Mahwah. John VandenBerg, Mahwah, N. J.

**WANTED**—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance.

The A. I. Root Co., Medina, Ohio.

### FOR SALE.

**HONEY LABEL**—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

**FOR SALE**—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

**ROOT'S** goods at Root prices. A. W. Yates, 3 Chapman St., Hartford, Conn.

**FOR SALE**—10-frame hive bodies in flat. C. H. Hodgkin, Rochester, Ohio.

**FOR SALE**—Novice extractor, practically new. A. V. Lott, Sellersburg, Ind.

**FOR SALE**—**SUPERIOR FOUNDATION**, "Best by Test." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

**ROOT'S BEE SUPPLIES**—For the Central Southwest Beekeeper. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

**FOR SALE**—Comb foundation which satisfies the most particular beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

**PUSH-IN-THE-COMB CAGES**—Quickest and safest way to introduce queens, 50c postpaid. F. R. Davis, 203 Oak St., Weehawken, N. J.

**HOFFMAN** frames and cypress reversible bottom-boards, new, in flat. Money-saving prices. Elton Warner, Asheville, N. C.

**HOW** many queens have you lost introducing? Try the safe way, push-in-comb introducing cage, 50c postpaid. O. S. Rexford, Winsted, Conn.

**BEES WANTED**—50 to 200 colonies free from disease. Conrad Weber, Liverpool, R. D. No. 1, N. Y.

**FOR SALE**—1400 new shallow frame supers, wired and full sheets, mostly drawn combs. R. B. Fletcher, Bliss, Idaho.

**FOR SALE**—New and used beehives and supers, 250-egg incubator. Farm of 140 acres. R. Hibbard, Calcium, N. Y.

**FOR SALE**—Full line of new and second-hand Jumbo and Langstroth bee supplies at modest prices. Send for complete list. The Hofman Apiaries, Janesville, Minn.

**FOR SALE**—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

**THE DOMESTIC BEEKEEPER**, under new ownership, now reaches every interest, contains exceptionally good articles, timely information, all the news worth printing. Monthly, \$1.50 per year. Sample copy for the asking.

The Domestic Beekeeper, Lansing, Mich.

**FOR SALE**—500 pounds of Dadant's light brood foundation for Hoffman frames, put up in boxes holding 50 pounds net. This foundation is in the best of shape, the same as I received it. I will not accept orders for less than one box. Price, 75c per pound. M. E. Eggers, Eau Claire, Wisc.

**PORTER BEE ESCAPES** save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies.

R. E. & E. C. Porter, Lewiston, Ills.

**FOR SALE** or on shares, 14 apiaries, one or all. Healthful location with American school and church in town, on stone road. Last crop over 40 tons. M. C. Engle, Herradura, Cuba.

**FOR SALE**—Good second-hand double-deck comb-honey shipping cases for  $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$  sections, 25c per case, f. o. b., Cincinnati. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

**FOR SALE**—Danzenbaker fences, section holders and end support boards for 50 10-frame supers. In good condition, no disease, \$30.00 for the lot, or fences alone, \$18.00.

A. C. Faulkner, Basking Ridge, N. J.

**BEEKEEPERS' SUPPLIES**—We manufacture hives, brood frames, etc., and sell a full line of beekeepers' supplies. Everything guaranteed to fit, and anything not satisfactory may be returned. Prices are the lowest. Send a list of your wants. We save you money. M. E. Ballard, Roxbury, N. Y.

**FOR SALE**—Owner wants use of one of our outside warehouses, so we must move this stock. Slightly dusty and shop-worn, 1-story 8-frame hives, packages of five, \$15.00; also a new 10-frame, \$17.50. Offer good only as long as this stock lasts. A. G. Woodman Co., Grand Rapids, Mich.

**FOR SALE**—One Root-Hatch wax press, single screw, good condition, \$12.50; one 60-gal. galvanized honey storage tank, \$14.00; new, white pine, standard dovetailed ten-frame hive bodies, with metal rabbets, nailed but not painted, in lots of ten or more, \$1.25 each.

J. B. Holoopeter, Queen-breeder, Rockton, Pa.

**FOR SALE**—Bargain price! All good as new. 4,000 Hoffman frames, slightly used, \$5.00 per 100; 1 Doolittle solar wax press, \$8.00; 10 reversible bottom-boards, 10-frame, 50c each; 1 Root improved wax press and uncapping can, \$20.00; 20  $4 \times 5 \times 1\frac{1}{2}$  plain section supers, 75c each empty. Or \$200.00 takes the lot. For immediate delivery. Edwin G. Baldwin, Ashtabula, Ohio.

### AUTOMOBILE REPAIRS

**AUTOMOBILE** owners should subscribe for the **AUTOMOBILE DEALER AND REPAIRER**; 150-page illustrated monthly devoted exclusively to the care and repair of the car. The only magazine in the world devoted to the practical side of motoring. The "Trouble Department" contains five pages of numbered questions each month from car owners and repairmen which are answered by experts on gasoline engine repairs. \$1.50 per year. 15 cents per copy. Postals not answered. Charles D. Sherman, 107 Highland Court, Hartford, Conn.

### MISCELLANEOUS

SEE our large advertisement on page 187. N. O. Fuller, Medina, O.

**FOR SALE**—Good two-story house with big garden and 50 colonies bees. Bargain. John Martin, Bell Center, Wisc.

S. C. Light Brown Leghorn Cockerels, the best show and laying strain, \$3.00 and up; also baby chicks. H. M. Moyer, Boyertown, R. D. No. 3, Pa.

**FOR SALE**—Carneau pigeons, 50 pairs red and yellow, fine birds, \$2.00 a pair. W. E. Gentner, Saugerties, N. Y.

**FOR SALE**—Unhulled, white blossom, biennial sweet-clover seed, \$3.50 per bushel, f. o. b. Macon. Miss. Geo. A. Hummer & Sons, Prairie Point, Miss.

**STRAWBERRY PLANTS**—Improved Senator Dunlap, best of all strawberries. Prices on application. McAdams Seed Co., Columbus Grove, Ohio.

**MY** supply of annual sweet clover seed is almost exhausted. Only 5 pounds left. S. Rouse, Ludlow, R. D. No. 2, Ky.

**FOR SALE**—New metal-spaced frames. Send 5c for sample frame and new low price, also new 10-frame hive bodies. Wm. Craig, Aitkin, Minn.

**FOR SALE**—Yellow biennial sweet clover seed, hulled, 17c a lb., unhulled, \$4.00 a bu. Send postage for small orders. F. Rasmussen, Rockville, Nebr.

**FOR SALE**—23 acres with wood, lumber, apple trees, buildings, engine and wood-sawing outfit, 16 colonies bees. Apply to owner, E. B. Whipple, Hillsboro, N. H.

**FOR SALE**—A. E. F. photos. A wonderful collection of 20 French Life Scenes for \$1.00. Catalog and sample for 10c. Homer R. Rowell, Groveland, Mass.

**FOR SALE**—Tomato seed, yellow, with large bright pink centers. Ornament to any table. Very productive. 10, 15, and 25c pkts. L. G. Knauf, Seaman, Ohio.

**MAPLE SYRUP**—I am now booking orders for pure maple syrup to be delivered in April. Order early. Satisfaction guaranteed. G. E. Williams, Somerset, R. D. No. 4, Pa.

**I WILL** gladly send to my customers postage money for the return of my two-pound bee cages, sent them with bees the last two seasons. I need them. They are worth \$1.00 apiece to me. Please notify me how many you have. Jasper Knight, Hayneville, Ala.

**NITRAPO**—15 per cent nitrogen, 15 per cent potash, all available. Best fertilizer known for fruit and truck crops. 100 lbs. equals ton mixed fertilizer. Write for descriptive circular and prices on Nitrapo and nitrate of soda. S. H. Burton, Gen. Sales Agent, Washington, Ind.

### WANTS AND EXCHANGES.

**WANTED**—Several colonies of bees. R. J. Whitney, R. D. No. 6, Royal Oak, Mich.

**WANTED**—A second-hand extractor. E. L. Garrow, E. Magnolia St., Lakeland, Fla.

**WANTED**—Several hives of bees or nuclei. Henry Roorda, 10729 LaFayette Ave., Chicago, Ills.

**WANTED**—Several bee-outfits (preferably near home). H. G. Quirin, Bellevue, Ohio.

**WANTED**—A good honey location and bee outfit. Delbert Lhommedieu, Colo, Iowa.

**WANTED**—20 10-frame queen-excluders, 7 wire and wood. J. A. Richard, Grelton, Ohio.

**WANTED**—Good power four-frame automatic extractor. Fred Day, Alcester, S. D.

**WANTED**—Second-hand queen-excluders, wood or metal. Karl J. Lohman, Cameron, Mo.

**WANTED**—To correspond with some person acquainted with beekeeping in the state of Tamaulipas, Mexico. I. C. Bachtel, Lake City, Calif.

**WANTED**—200 or less colonies of bees for spring delivery. Any style hive or box. Remembering 10c honey is in sight for 1921. A. W. Smith, Birmingham, Mich.

**WANTED**—Bees on Hoffman frames free from disease. Write stating number of colonies and price, to J. W. B., care The A. I. Root Co., Inc., 23 Leonard St., New York City.

**WANTED**—Disease-free bees, beehives, supers, tops, and bottoms. What have you? Lloyd W. Smith, Madison, N. J.

**WANTED**—50 second-hand 10-frame Standard hive bodies. A. F. Roorda, 10741 Lafayette Ave., Chicago, Ills.

**WANTED**—To quote special prices on queen cages in quantity lots, to breeders. State quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

**WANTED**—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

**WANTED**—50 comb-honey supers, complete, for 4¼ x 4¼ sections, f. o. b. here. G. W. Osterhouse, Pico, Idaho.

**WANTED**—Second-hand 10-frame comb-honey supers, 4 x 5 plain sections preferred. Must be good and clean and within 400 miles of Sioux City. M. G. Beals, Oto, Iowa.

**WANTED**—To exchange 4-horse E. B. right-hand, 2-gang riding plow, almost new, only used one season. Having bought a tractor and 3-gang plow is reason for wanting to exchange for bee supplies, and nuclei with queens. What have you? J. C. Provins, Spartansburg, Pa.

### BEES AND QUEENS.

**FINEST** Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

**FOR SALE**—Italian queens and nuclei. B. F. Kindig, E. Lansing, Mich.

**HARDY** Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

**WHEN it's GOLDEN, it's PHELPS.** C. W. Phelps & Son, Binghamton, N. Y.

**GOLDEN** Italian queens, untested, \$1.50 each; dozen, \$14.00. E. A. Simmons, Greenville, Ala.

**FOR SALE**—1921 Golden Italian queens, price list free. Write E. E. Lawrence, Doniphan, Mo.

**FOR SALE**—Bright Italian queens, \$1.50 each; \$14.00 per doz. Ready after April 15. T. J. Talley, Greenville, R. D. No. 3, Ala.

**NOTICE**—We have booked orders for all the bees we will sell this season. Jones & Stevenson, Akers, La.

**FOR SALE**—Golden queens ready May 1; 1, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100. Virgins, 75c each. W. W. Talley, Greenville, R. D. No. 4, Ala.

**FOR SALE**—12 colonies in 10-frame Standard hives. Wintered in winter cases, pure-bred Italian queen, 1920. Emil Uydert, New Brunswick, N. J.

**FOR SALE**—1 or 50 colonies of bees in 10-frame Hoffman hives, inspected, \$20.00 each, April and May delivery. S. K. Blundin, Oxford Valley, Pa.

**FOR SALE**—14 colonies; 2-frame reversible extractor; 24 extra bodies and 45 supers for comb honey. Price, \$175. George Olson, Hematite, Mo.

**PACKAGE BEES and PURE ITALIAN QUEENS.** Booking orders now for spring delivery. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

**FOR SALE**—450 hives of bees; 800 comb-honey supers filled with sections; 600 empty comb-honey supers; 600 extracting hives with combs; 200 hives of full sheets; 500 empty cans; 700 shipping cases; 4-frame power extractor and other bee supplies, with Dodge commercial car, and store house and four acres. Write for further information. J. A. Cornelius, Crook, Colo.



FOR SALE—Golden or three-banded virgins, 60c each, or \$6.00 per dozen. Safe arrival.  
R. O. Cox, Luverne, Ala., R. D. No. 4.

BEEES and QUEENS from my Carolina apiaries—progeny of my famous Porto Rican pedigreed-breeding stock. Elton Warner, Asheville, N. C.

FOR SALE—Leather-colored Italian queens, tested, until June 1, \$2.50; after, \$2.00; untested, \$1.25; 12, \$13.00. Root's goods at Root's prices.  
A. W. Yates, 15 Chapman St., Hartford, Conn.

Business-First queens, untested, \$1.50 each; select untested, \$1.75; tested, \$2.25; select tested, \$2.50. Safe delivery guaranteed, orders filled promptly.  
M. F. Perry, Bradentown, Fla.

PACKAGE BEES and NUCLEI with ITALIAN QUEENS, for spring delivery. No disease in our yards. Write for prices and terms.  
The Allenville Apiaries, Allenville, Ala.

FOR SALE—A. I. Root Co. strain of leather-colored Italians. Virgins only, May to October 1, 75c; 10, \$7.00; 100, \$65.00.  
P. W. Stowell, Otsego, Mich.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

FOR SALE—Queens, Golden or three-banded. Untested only. 1, \$1.50; 6, \$8.00; 12, \$15.00. Orders booked now for June 10 or later.  
Ross B. Scott, LaGrange, Ind.

FOR SALE—15 colonies of Italian bees of 10 frames, frames wired and combs built from full sheets of foundation. No disease.  
H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio.

BEEES—35 hives of bees in 10-frame hives, Hoffman frames, all foundation drawn comb; also extra hives and supers, with drawn combs located near Kingston, N. Y. Write J. O. Stewart, 742 Elmore Pl., Brooklyn, N. Y.

ORDERS booked now for delivery June 1. 3-frame nuclei and queen, \$7.50; select tested, \$8.50. Dr. Miller's strain. No pound packages. Low express rates and quick transit to north.  
S. G. Crocker, Jr., Roland Park, Baltimore, Md.

1921 price of bees and queens from the A. I. Root Co. leather-colored stock. 1 lb. bees with queen, \$5.00; 2 lbs. \$7.50. Untested queens, \$1.50 each; dozen, \$15.00. Safe arrival. Orders booked now.  
Greenville Bee Co., Greenville, Ala.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, \$1.50; tested, \$3.00; virgins, imported mothers, 50c.  
F. M. Russell, Roxbury, Ohio.

WE are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.  
Sarasota Bee Co., Sarasota, Fla.

FOR SALE—100 colonies bees, 10-frame hives, first class absolutely. These can be shipped north April 15 and made into two colonies by June. No better investment can be made, \$12.00 each.  
Joe C. Weaver, Cochrane, Ala.

ITALIAN QUEENS OF WINDERMERE are superior three-banded stock. Untested, \$1.50 each; 6 for \$8.00; tested, \$2.50 each; select tested, \$3.00. Bees by the pound. Write for prices.  
Prof. W. A. Matheny, Ohio University, Athens, O.

FOR SALE—Italian bees by the colony, free from foul brood, 8, 9, and 10 frame hives (Hoffman frames), strong colonies, \$15.00; good, \$13.50, and medium, \$12.00, delivered on board cars at Dayton, Pa., in good order. Cash with order. Inquire of Jacob Long, Sr., Dayton, R. D. No. 1, Pa.

BOOK your orders now for our three-banded and Golden Italian queens: untested, \$1.25 each; 6, \$6.50; 12, \$12.50. G. H. Merrill, Pickens, S. C.

IF good three-banded Italian queens are wanted, send your order to M. Bates & Sons, Greenville, Ala., R. D. No. 4. One queen, \$1.15; 100, \$100. Pure mating, safe arrival, and satisfaction guaranteed.

DAY-OLD ITALIAN QUEENS—High quality, low price, satisfied customers. Safe arrival guaranteed in U. S. and Canada. Safe introduction. Prices: 1, 75c; 12, \$7.20; 100, \$60. Write for circular early.  
James McKee, Riverside, Calif.

WILL ship by April 30 about 50 3-frame nuclei, or 50 3-lb. packages with untested queens, at \$7.50 each in lots of 5 or more. 20 per cent deposit. Lots of experience at shipping end, as well as receiving end.  
A. J. Heard, Kirkwood, Ga.

FOR SALE—30 colonies of bees in 10-frame hives, spaced 9 frames to the hive, shipment to be made about June 1 after they are unpacked. Also write for prices on what you may want in bee supplies.  
F. J. Rettig, Wabash, Ind.

FOR SALE—2-lb. packages Italian bees and queens by parcel post, postage paid, delivery April 15, for \$8.50; 2-frame nuclei with Italian queen by express, not prepaid, delivery May 5, \$9.00.  
Otto J. Spahn, Pleasantville, N. Y.

FOR SALE—Three-band Italian bees and queens, ready June 1. Fine stock, free from disease and guaranteed to please you. (One grade) select untested queens, \$1.50 each; 6, \$8.00; 12, \$15.00; 50, \$60.00. Nuclei, \$3.00 per frame, Hoffman; bees, \$3.00 per pound. A. E. Crandall, Berlin, Conn.

FOR SALE—100 to 500 colonies bees, and also our home if desired. This is a chance to purchase a business located in some of the finest buckwheat territory within New York State. Come and look this proposition over. Full details given by letter.  
Fred D. Lamkin, Poplar Ridge, N. Y.

FOR SALE—Root's strain of golden and leather-colored Italian queens, bees by the pound and nuclei. Untested, \$1.50 each; select untested, \$2.00; tested, \$2.50 each; select tested, \$3.00. For larger lots write. Circular free.  
A. J. Pinard, 440 N. 6th St., San Jose, Calif.

SHE-SUITS-ME queens, season of 1921. Untested Italians, \$2.00 each, 10 or more, \$1.75 each, from May 15 to June 15. After June 15, \$1.50 each, up to nine queens, 10 to 24 queens, \$1.40 each, 25 and up, \$1.25 each.  
Allen Latham, Norwichtown, Conn.

FOR SALE—Three-banded leather-colored and Golden Italian bees. These are great honey-producers. Gentle, hardy, resistant against bee diseases. Two, three and four lb. packages, with one comb of brood to each package. Safe delivery, no disease. With or without queens.  
M. Voinche, Bunkie, La.

FOR SALE—Honey-Brook Farm can supply you promptly, beginning April 10, with the very best three-banded Italian queens, one grade, select untested, \$1.50 each or \$15 per dozen; tested, \$2.00 each straight, ready April 1. Should you find some queenless colonies this spring, send me your order for a young queen to save them. I will not disappoint you. I have the bees and can deliver the goods. Pure mating, safe arrival, and satisfaction guaranteed.  
Jasper Knight, Hayneville, Ala.

IF you think PHELPS GOLDEN QUEENS are BEAUTIFUL, GENTLE, and just what you want to IMPROVE YOUR STOCK, we will do our best to supply you if you do not rush us quite as hard as you did last year, but will give us time to fill your order in its turn. Mated (untested), \$2.00 each; virgins, \$1.00 each; tested, from \$4.00 to \$5.00 each; select breeders, \$10.00 each. We will commence sending queens just as early as weather will permit us to rear good ones. O. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

**BEES BY THE POUND**, also pure-bred **QUEENS**; booking orders now for delivery after March 15th. Everything guaranteed. Brazos Valley Apiaries, Gause, Texas.

**FOR SALE**—Pure Italian queens and nuclei, 1 untested queen, \$1.50; 12, \$15.00; tested queens, \$2.50 each; 2-frame nucleus, \$5.00; 3-frame nucleus, \$6.50. Add price of queen wanted to price of nucleus.  
Frank Bornhoffer, R. D. No. 17, Mt. Washington, O.

WE are now booking orders for 3-lb. packages for May delivery, 3-lb. package with untested queen, \$7.00; 3-lb. package with tested queen, \$8.00. Orders booked as received. Safe delivery, satisfaction and no disease guaranteed. All bees shipped on a comb of brood and honey, 50 per cent down will book your order. J. L. St. Romain, White Clover Farm & Apiary, Hamburg, La.

**FOR SALE**—Pure Italian queens, Golden or leather-colored, packages and nuclei; 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100; virgins, 50c each; packages 24 and under, \$2.25 per pound; 25 and over, \$2.00 per pound; nuclei, 1-frame, \$4.00; 2-frame, \$6.00; 3-frame, \$7.50; queens extra. One-story 10-frame colony with queens, \$12.00. Golden Star Apiaries, R. 3, Box 166, Chico, Calif.

**FOR SALE**—100 12-frame hives; 175 extracting supers, 1000 drawn combs; 500 wired frames; 300 empty frames; 70 queen-excluders; 75 metal top corners; 20 wood top corners; 40 inner covers; 25 wintering boxes for two hives each. The frames are not as large as the standard. The hives are about the same capacity as the standard 10-frame hive. Located near Scottdale, Mason County, Mich.  
L. D. Allen, Myakka City, Fla.

**FOR SALE**—Five hives of Italian bees, one 8-frame double, four single, all Langstroth. All went into winter quarters strong, plenty of honey, and are packed in one large case on east side of building. Four queens are one year old, one queen two years. Five queen-excluders and 12 shallow supers go with bees. Bees were inspected two years ago and have no disease. \$40.00 for the lot.  
M. A. Bartlett, 508 Lincoln Ave., N. W. Canton, O.

**QUEENS**, three-banded Italians only. Now that the booking season for nuclei has passed, and, while I have a large number of orders for nuclei, I shall not be too busy with these to fill your orders for queens. 1 untested for April, \$1.25; 12, \$12.50; 1 untested for May 1 to June 1, \$1.00; 12, \$10.00. I ship no queens after June 1; weather is too hot. Discount on large orders. Safe arrival guaranteed.  
L. R. Dockery, Carrizo Springs, Texas.

**FOR SALE**—Three-banded and Golden queens, also package bees. No disease and safe arrival guaranteed. Queens any time after March 15. Untested, \$1.75 each; 25 or more, \$1.50 each; tested, \$3.00 each; breeders, \$10.00 each. As our honey flow is practically over by May we will begin shipping package bees about May 15. 1-lb. package, \$3.00; 2-lb. package, \$5.00. We will not book any orders that we cannot fill. Dr. White Bee Co., Sandia, Texas.

**FOR SALE**—1921 prices on nuclei and queens, 1-frame nucleus, \$3.00; 2-frame nucleus, \$5.00; 3-frame nucleus, \$6.50, without queens, f. o. b. Macon, Miss. 5 per cent discount in lots of 25 or more. Untested queens, \$1.50 each; \$15.00 per dozen; tested, \$2.00 each; \$22.00 per dozen. No disease. Inspection certificate with each shipment. Safe arrivals and satisfaction guaranteed in U. S. Queens sold only with nuclei.  
Geo. A. Hummer & Sons., Prairie Point, Miss.

**FOR SALE**—2-lb. package bees without queens, \$4.50; 3-lb. same as above, \$7.75; 5-lb. swarm, \$8.00. Queens, each \$1.50. Select tested queens for breeders, \$2.50 each. A few hybrid bees from outyards, but remember all queens are reared from our home-yard. We are now booking orders for May deliveries, 20 per cent cash with order, balance 10 days before shipping. Safe delivery guaranteed, also free from disease of any kind. Oscar Mayeux, Lock Box No. 15, Hamburg, La.

**FOR SALE**—Three-band leather-colored Italian bees and queens, two-pound packages only. Shipping season from April 15 to May 20. Safe arrival and satisfaction guaranteed. No disease. Order early if you wish prompt delivery. Write for price list.  
J. M. Cutts, Montgomery, R. D. No. 1, Ala.

**VIGOROUS** leather-colored Italian queens, famous three-banded stock; untested, \$2; tested, \$3; in lots of 25 or 50, \$1.50 each. Bees in packages, two pounds, \$6; three pounds, \$7; 10 three-pound packages, \$7.50 each, including queens. Nuclei, two-frame, \$6; three-frame, \$7; queens extra; in lots of ten, each with queen, \$7.50. Good, strong colonies in 10-frame standard hives, \$18 each. I believe my queens can not be surpassed; I breed from select stock. Terms, cash with order for these reduced prices. References furnished if required. Shipments begin during latter part of April.  
C. M. Elfer, St. Rose, La.

**PRITCHARD QUEENS** (Three-banded Italians) —My first season selling direct to the trade. June price: 1 untested, \$1.75; 6 for \$9.50; 1 select untested, \$2.00; 6 for \$11.00. After July 1: 1 untested, \$1.50; 6 for \$8.00; 1 select untested, \$1.75; 6 for \$9.50. Write for prices on larger quantities. I have a few extra-select tested queens one-year old at \$5.00 each. Queens clipped free of charge on request. Acknowledgment and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Let me book your order now for early delivery, specifying the date of shipment desired. Otherwise orders will be filled in rotation. Arlie Pritchard, Medina, Ohio.

**FOR SALE AT A BARGAIN**—A fine bee outfit and 30 acres of good land. 40 colonies bees in A1 condition in one of the best wintering cellars in Michigan. A fine honey-house over cellar. Queens are all young, 8 and 10 frame hives, square-edge Hoffman frames, all nice, straight combs; also a No. 1 outfit for several hundred colonies. No. 1 wax-rendering outfit, steam heat from a No. 1 high-pressure boiler, large capping tank, also Peterson melter and outfit, oil stove and tanks, lumber, comb, foundation, etc. Apiary is nicely protected from cold winds by natural-growth timber and bushes. This is one of the very best locations in Michigan for honey. Oceans of both alsike and white clover, basswood, sumac, and considerable raspberry, with plenty of spring and fall bloom. Outfit also includes hundreds of supers of good extracting combs, and supers ready for foundation, all in good condition. The small number of colonies of bees is due to my having sold most of them last spring. Price, \$1400, one-half cash, balance to suit. Reason for selling—old age and inability to work. Must make some change soon. O. H. Townsend, Lake City, Mich.

## HELP WANTED.

**WANTED**—A live young man to help me during season of 1921. Allen Latham, Norwichtown, Conn.

**WANTED**—Both experienced and inexperienced help, board furnished. State experience and wages in first letter. Stover Apiaries, Mayhew, Miss.

**WANTED**—Young man of good habits, to work with bees, some experience necessary. Room and board furnished. State all particulars in first letter.  
B. B. Coggsall, Groton, N. Y.

**WANTED**—Experienced beeman, married man preferred. State in first letter experience and ability, age, nationality, and wages wanted.  
W. J. Stahmann, Clint, Texas.

**WANTED**—Man with some experience to work with bees coming season. State age, experience and wages, based on our furnishing board. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

**WANTED**—Married man to work with bees and poultry, house and garden furnished. State experience had, age, weight, and height. Also wages expected. Reference required. Also one single man wanted.  
E. L. Lane, Trumansburg, N. Y.



WANTED for the season of 1921 an experienced queen-breeder. State experience had, reference, age, height, weight.

W. J. Forehand & Sons, Ft. Deposit, Ala.

WANTED—Active and reliable young man for coming season, begin about April 1. Will give benefit of my experience and some wages. State weight, height, age and beekeeping experience, if any, also wages expected. Have several apiaries and modern equipment.

David Running, Filion, Mich.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference, and wages wanted. W. A. Latshaw Co., Clarion, Mich.

WANTED—A willing and reliable, clean young man to assist with bees in outyards. Will give you my experience and wages. State experience you have had, age, weight, height, and wages expected. Board and lodging furnished. Start work about March 1.

A. L. Coggsall, Groton, N. Y.

WANTED—Married man to work with bees and poultry. House and garden furnished. State experience had, age, weight, and height; also wages expected. Reference required. Also one single man wanted. G. G. Cimbring, 901 Cemetery St., Williamsport, Pa.

HELP WANTED—Will give experience and fair wages to active young man not afraid of work, for help in large, well-equipped set of apiaries for season, starting in April. State present occupation, weight, height, age, and beekeeping experience, if any. Morley Pettit, The Pettit Apiaries, Georgetown, Ont.

WANTED—Two young men, able-bodied, willing to work, clean in body and mind, who want to learn beekeeping and are willing to exchange faithful services for instruction from a man with almost 40 years of extensive experience in beekeeping, board and some financial remuneration. Have 12 apiaries. R. F. Holtermann, Brantford, Ont., Can.

WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1000 colonies. Opportunity to learn the business from A to Z, 1920 crop 122,000 pounds. Theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter. E. F. Atwater (former Special Field Agent in Beekeeping, U. S. Dept. Agr.), Meridian, Idaho.

## SITUATIONS WANTED

SITUATION WANTED by experienced beekeeper. Shares or salary. Good references. State proposition in first letter. N. B. Armstrong, 406 Center St., Ithaca, N. Y.

TWO high school seniors want work in modern apiary during vacation, June 14 to Sept. 7. Well-read. Backlot experience.

L. F. Horn, 3209 Greenwood Ave., Louisville, Ky.

WANTED—Young man, 19, wants position in modern apiary, after finishing senior year in High School; good deal of experience with bees. Report early in June. N. C. or Tenn. preferred.

Wellons Dunn, Paces, Va.

WANTED—Work on poultry farm, or in apiary west of Rocky Mts., until beginning of next high school term, by boy 18 years of age. Employer must furnish references. Dwight Glassey, Albany, R. D. No. 2, Ore.

WANTED—Swedish young man, 27, wants work with some extensive apiarist as helper to gain experience in extracted-honey production, or queen and package business. Go anywhere. Some experience. H. N., care Miss V. Nordenswan, 26 Breed St., Lynn, Mass.

POSITION WANTED—Work in first-class apiary under experienced beekeeper. Worked parts two seasons. Want to work with bees. Better experienced in extracting. Can drive Ford. Good nailing up and wiring.

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69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines mailed for 25c. Descriptive catalog free. LEWIS ROESCH, Box L, Fredonia, N. Y.

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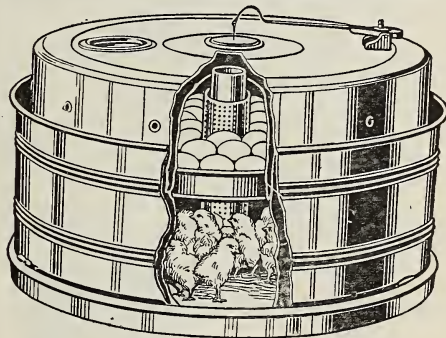
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Untested \$1.25; Select untested \$1.50.

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Mating and Quality guaranteed.

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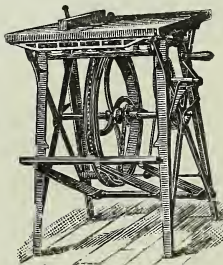
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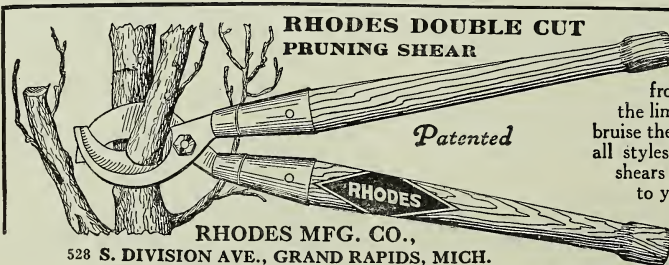
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Three-band Italians and Goldens, pure mating  
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pruner  
made that cuts  
from both sides of  
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all styles and sizes. All  
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Write for  
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## FOR SALE

Three-banded Italian Bees and Queens after April 15th.	1	12
Untested Queens .....	\$1.75	\$15.00
Select Untested Queens....	2.25	20.00
Tested Queens .....	2.75	28.00
Select Tested Queens.....	3.25	33.00

Breeders \$5.00 to \$10.00 at all times.  
A limited amount of one and two frame Nuclei. Prices on request.

**H. L. MURRY**  
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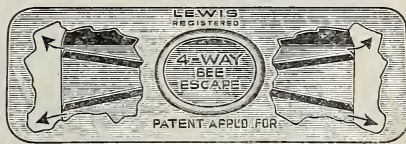
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will furnish 3-banded Italian bees and queens:  
Untested queens, \$1.00 each; tested, \$1.50 each.  
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Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.

Prices for 1921.

1 to 4 inclusive	\$3.00 ea.
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## Pure Italian Queens, Nuclei, Full Colonies

Orders booked now for delivery spring and summer 1921. Untested, 1 to 12 inclusive, \$1.50 each; over 12, \$1.25 each. Select Untested, 1 to 12 inclusive, \$1.75; over 12 \$1.50 each. Tested, 1 to 12, inclusive, \$2.50; over 12, \$2.25 each. Select Tested, suitable for breeders, \$5.00 each.

Two-frame nuclei, \$5.00 each; add price of queen wanted.

Eight-frame colony, \$15.00; ten-frame colony, \$17.50. Tested queen in all of these, and all good combs.

Health certificate with each shipment. Safe delivery in United States guaranteed. Satisfaction everywhere.

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# Did You Receive Our Catalog?

We handle a full line of beekeepers' supplies, honey cans, and foundation. We are Texas headquarters for Lewis Beeware, Bingham Smokers, Muth Veils, Dadant Foundation, and

## Aluminum Honey-Combs

This very important addition to beekeeping equipment is being manufactured here in Texas by a company composed wholly of beekeepers.

### Advantages

Positive prevention of loss from melting in hot weather—this comb is constructed of aluminum (not wax), therefore it entirely eliminates loss of bees and honey through melting and sagging of combs in hot weather.

Extraction of heavy honey easily accomplished with this comb; this is practically impossible with wax combs. Breakage of combs in extracting is eliminated.

This comb permits entire control of the production of drone-bees.

This comb will last a lifetime; you can use it over and over again.

### Uses

The combs furnish quick storage space in the supers. They should be first used as extracting combs. The cells are perfect worker-cells a quarter of an inch deep. The bees extend the cells with wax to full depth. They are then easily uncapped and after being once extracted may be used as brood combs.

Queen-cells are drawn on this comb as readily as on wax combs. The uncapping knife does not mash the cell walls if common care is used.

Should you neglect your aluminum combs the moths may eat the wax extension, but will not harm the metal.

Bees have been successfully wintered on these combs in climates as varied as that of Texas and Nevada.

### Price List

Standard Langstroth (Hoffman brood frame) size, each ..... 60c  
Shallow Extracting (5% in. deep) size, each ..... 50c  
Modified Dadant (Jumbo depth) size, each ..... 70c

Prices are f. o. b. San Antonio, Texas.  
Parcel Post Weight, 1 comb.... 2 lbs.  
Parcel Post weight, 10 combs.. 11 lbs.  
Parcel Post weight, 20 combs.. 20 lbs.

The Editors of Gleanings in Bee Culture, altho not indorsing aluminum combs, will thoroughly test these combs made in Texas, and will announce their conclusions as to the merits of them, in their climate and latitude, upon the completion of their tests in several apiaries.

Write for our new catalog containing full description and prices on Lewis Beeware, Dadant Foundation, Aluminum Honey Combs.

## TEXAS HONEY PRODUCERS' ASSOCIATION

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E. G. LE STOURGEON, Manager.

## Quality Bee Supplies From a Reliable House

¶ Without fear or favor I place my BEE SUPPLIES and SERVICE before you.

¶ It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S goods. Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

¶ I am ready to meet your urgent needs. Send for my latest price-list.

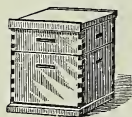
¶ Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames, and eight-frame D. T. supers for 4 x 5 sections. At cost price, write for quotations.

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## BEE SUPPLIES



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Established 1899.

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This accurate trimming not only expedites placing the foundation in the frames, but also permits of such close packing for shipment that there is no chance for it to chuck around, thus jamming the edges.

Although this extra trimming adds to the cost of manufacture, still my prices are lower than others.

Your own wax worked into foundation at lowest rates. Send for complete price list.

**E. S. Robinson**

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## QUEENS AND BEES

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, TRY NORMAN BROS. pure three-banded Italians, queens and bees, and see for yourself. We are not going to say that we have the best in U. S. A., but we do say that we have as good as can be bought for the money. Our bees are hardy, gentle, prolific, disease-resisting, and honey-gatherers. Orders booked for one-fourth cash; balance before shipment is desired.

Prices for April, May, and June.			
	1	6	12
Untested .....	\$1.50	\$8.00	\$15.00
Select Untested .....	1.75	9.25	16.50
Tested .....	2.75	13.75	24.50
Select Tested .....	3.50 each		

BEES—We ship only 2-lb. pkgs. by express \$5.00 each; 25 or more, \$4.75 each f. o. b. shipping point. Add prices of queens wanted. We guarantee pure mating, safe arrival, and freedom from all diseases. Remember you take no risk when you deal with us. Isn't that enough said? Reference: Bank of Ramer, Ramer, Ala.

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Because of 28 years of experimental work, with both queen-breeding and honey-production. With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders. OUR SERVICE STATION.—We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-banded Italians only. Nov. 1st to June 1st.

	1	6	12
Untested .....	\$2.00	\$9.00	\$16.00
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Select Tested .....	3.50	19.50	36.00

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival, and perfect satisfaction guaranteed. Write for circular and large-order discounts. Foreign orders at receiver's risk.

N. FOREHAND - - - - - RAMER, ALABAMA



## THE OLD RELIABLE THREE-BANDED ITALIANS



Booking orders now for 1921. Queens ready April 1st. My Italians are of an exceptionally vigorous and long-lived stock strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. I have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash, balance before delivery. Will guarantee safe arrival in the United States and Canada. Descriptive circular and price list free.

Prices April, May, and June			July to November		
	1	6	12	1	6
Untested .....	\$1.50	\$8.00	\$15.00	\$1.25	\$6.50
Select Untested .....	1.75	9.00	16.00	1.50	8.00
Tested .....	2.50	12.50	24.00	2.25	12.00
Select Tested .....	3.00 each			3.00 each	

No nuclei or pound packages for sale. John G. Miller, 723 C St., Corpus Christi, Tex.



## HONEY-BROOK FARM

TWO & THREE  
LB. PACKAGES  
ITALIAN BEES  
—ALSO THREE-  
BANDED ITAL-

IAN QUEENS—Delivered to you by parcel post. My bees are untiring workers—gentle, prolific, properly priced. Pure mating absolutely guaranteed. Ready for shipping April 10. To be in line let me book your order now. Only ten per cent cash required with order, balance just before you desire shipment. No package bees sent without a queen.

Prices: Two-pound packages, including untested queen, \$6.50. Three-pound package, including untested queen, \$9.00. Twelve or more packages, 25c per package less. Queens: Untested, \$1.50 each, or \$15 per dozen. Tested, \$2.00 each straight. I will pay all postage on package bees and queens. Empty cages to remain my property and to be returned at my expense. Prompt service, safe arrival and satisfaction guaranteed.

JASPER KNIGHT, PROP.

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## FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

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## Southern Headquarters for Package Bees and Reliable Queens

### Three-Banded Italians Only

PRICE OF BEES: 1-lb. package, \$3.50; 2 lbs., \$5.50; 3 lbs., \$7.50. Add price of grade of queen wanted to these prices. Write for descriptive price list.

PRICE OF QUEENS: Untested, \$1.50 each; six, \$8.50; twelve, \$16.00; fifty or more, \$1.25 each. Select untested, \$1.75 each; six, \$9.50; twelve, \$18.50; fifty or more, \$1.50 each. Tested Queens, \$3.00 each.

Prompt service, safe arrival of queens, and satisfaction we guarantee. Any of our untested queens that prove to be mated will be replaced free of charge. No foul brood or other contagious bee disease has ever been in our vicinity.

**W. D. ACHORD**

**FITZPATRICK, ALABAMA**



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**I**NDICATIONS point to an early spring. You'll want bee supplies on hand when the season starts.

Order now! Deliveries can then be made in plenty of time. For 40 years "Falcon" bees and supplies have been giving satisfaction. Let them help you make this year the biggest and best ever.

Write for our red catalog.

**W. T. FALCONER MFG. CO.**

**FALCONER (near Jamestown) N. Y., U. S. A.**

Where the best beehives come from.

## Honey Producers, Take Notice

Do you realize it is only a short time until your bees will be taken out of winter quarters? Have you thought about supplies for next season? Do not wait until swarming time for that means dollars out of your pocket. Order your supplies **NOW**.

We manufacture and carry in stock a complete line of Bee Supplies ready for prompt shipment. Send us a list of the supplies you wish to purchase and we will be pleased to quote you our prices. Our 1921 descriptive catalog and price list is now ready for mailing. Send us your name and address and we will mail it to you.

**August Lotz Company, Boyd, Wisconsin**



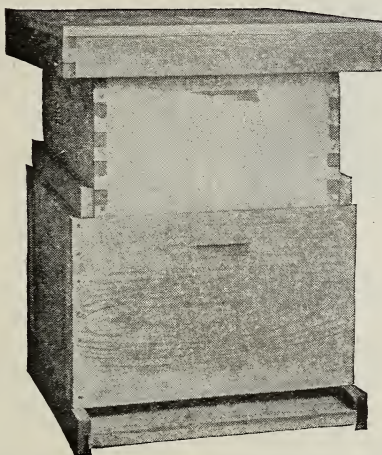
Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

## Modified Dadant Hive



### Modified Dadant Hive Features.

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced  $1\frac{1}{2}$  inches for swarm control.
3. Extracting frames  $6\frac{1}{4}$  inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

G. B. Lewis Company - - - - - Watertown, Wisconsin  
Dadant & Sons - - - - - Hamilton, Illinois

## Those delicious vegetables

and glorious flowers that you admired last summer—do you realize that many were grown from Storrs & Harrison seeds?

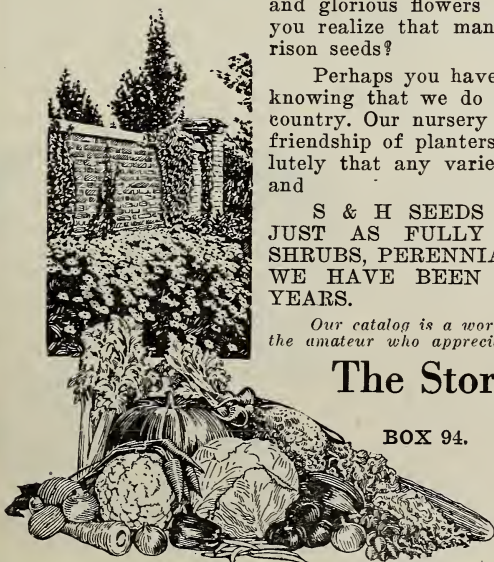
Perhaps you have thought of us only as nurserymen, knowing that we do the largest nursery business in the country. Our nursery trade was built up by holding the friendship of planters who know they may depend absolutely that any variety we offer has outstanding merit, and

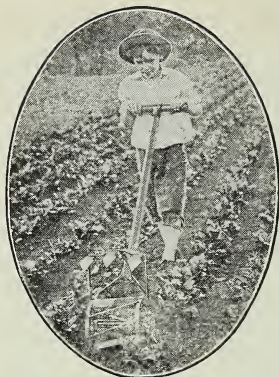
S & H SEEDS DESERVE YOUR CONFIDENCE  
JUST AS FULLY AS THE SPLENDID TREES,  
SHRUBS, PERENNIALS AND ORNAMENTALS THAT  
WE HAVE BEEN PRODUCING THESE LAST 67  
YEARS.

Our catalog is a worthy helper for the professional grower and the amateur who appreciate the better varieties.

### The Storrs & Harrison Co.

BOX 94. NURSERYMEN AND SEEDSMEN  
PAINESVILLE, OHIO.





## Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch—all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

### BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife—like a lawn mower. Best Weed Killer Ever Used." Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels for deeper cultivation—3 garden tools in 1.

#### FREE ILLUSTRATED BOOK.

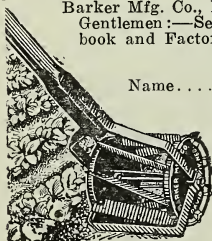
Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

### BARKER MANUFACTURING COMPANY

Dept. 23.

David City, Neb.

Barker Mfg. Co., Dept. 23, David City, Neb.  
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.



Name.....

Town.....

State.....

R. F. D. or Box.....

## Two Thousand Nuclei For Spring Delivery

A great many progressive beekeepers of today buy nuclei to make up winter losses, or in the form of pound packages to strengthen weak colonies. We know this is a good investment, and for a good many years have raised bees in the South, sending them north to catch the honey flow in July and August. It is our policy, in furnishing our customers with bees from our southern apiaries, to furnish bees that give satisfaction to you, as they have to us for the past ten years. We are very particular as to the strain of bees we keep, and the rearing of our queens is in the hands of an expert.

We maintain that the queen is the life of the colony, and they are reared under the most favorable conditions, that of natural swarming, and they are fine large ones with energy to spare, and as good as money can buy. However, we do not sell queens, but we see that a good queen goes with every nucleus we sell. We guarantee you safety against disease, as our bees are inspected constantly, and our apiaries closely watched to see that no disease appears. Our prices as follows:

	April	May	June
1-frame nucleus	\$4.00	\$3.50	\$3.00
2-frame nucleus	5.50	5.00	4.50
3-frame nucleus	7.00	6.50	6.00
4-frame nucleus	9.00	8.50	8.00
Full colonies of bees, \$12.00 per colony			

1-pound package	\$2.50
2-pound package	4.50
3-pound package	6.50

For packages with queens add \$1.50 for each package.

**WEBER BROS.  
HONEY CO.  
RIALTO, CALIFORNIA**



Our Food Page—Continued from page 156.

**J**UST at this point a letter arrived from Axel Holst, St. Thomas, Virgin Islands, which is so in line with what I have written that I am going to quote briefly from it.

Mr. Holst says: "If Fat Soluble vitamine, the growth essential, in honey is due to pollen, then it would be fair to conclude that where pollen is being used as a food that growth would ensue. In the Beekeepers' Guide (1910) page 126, Prof. Cook states, 'As the microscope shows, undigested pollen is given to the drone larvae after the fourth day, which is not true of either queen or worker.' The drone undoubtedly becomes the largest of them all.

"The said vitamine might also be found in the wax itself, but even so be due to the pollen in the honey consumed in order to make the wax. The newer the comb, the greater the contents of vitamine would most likely be—also one reason why it could be found in comb honey but not in extracted.

"That the presence of pollen is of great importance in the production of wax and influencing the ease with which wax is being produced, I believe is well known; and the abundance of pollen in spring time may be the reason for the apparent ease with which wax is being produced at that time."

The above needs no comment, but I would like to add that R. Adams Dutcher in 1918 proved that corn pollen is relatively rich in the Water Soluble B vitamine, but I do not know of any investigations with reference to the Fat Soluble vitamine. As pollen is a food for the young of bees, it seems reasonable to suppose that it would contain the latter-named vitamine as well as the former.

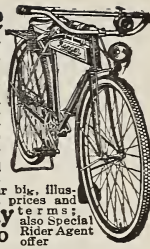
## Delivered to you Free

for 30 days trial on approval. Your choice of 44 Styles, colors and sizes of famous **Ranger Bicycles**. **Factory-to-Rider** lets you buy at wholesale prices, express prepaid, direct from maker.

**12 Months to Pay** lets you enjoy it at once. Many boys and girls easily save the small monthly payments. The **Ranger** is a better bicycle than you can buy anywhere at any price.

**Tires** lamps, horns, wheels, parts and equipment at half usual prices. **SEND NO MONEY.** Simply write for our free **Ranger** catalog with lowest prices and terms.

**Mead Cycle Company**  
Dept G Chicago 153



bk. Illustrated free **Ranger** catalog with lowest prices and terms. Also Special **Rider Agent** offer

## VICK'S GARDEN & FLORAL GUIDE for 1921

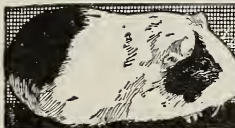
IT'S FREE A WORTH WHILE BOOK WRITE TODAY

For vegetable growers and all lovers of flowers. Lists the old stand-bys; tells of many new varieties. Valuable instructions on planting and care. Get the benefit of the experience of the oldest catalog seed house and largest growers of Astors in America. For 72 years the leading authority on vegetable, flower and farm seeds, plants, bulbs, and fruits. 12 greenhouses. 500 acres.

**Vick Quality Seeds Grow the Best Crops the Earth Produces**

This book, the best we have issued, is absolutely free. Send for your copy today before you forget. A postcard is sufficient.

**JAMES VICK'S SONS, 33 Stone St. Rochester, N. Y. Their lower City**



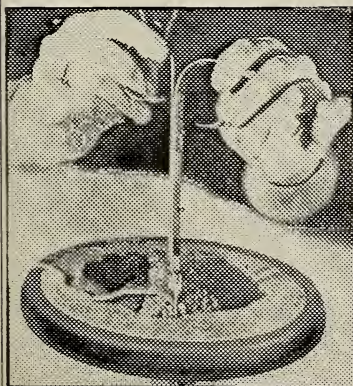
## Raise Guinea PIGS FOR US!

We need men and women, boys and girls everywhere to raise Guinea Pigs for us. We tell you where to get them, show you how and buy all you raise. Big opportunity for money making. Thousands needed weekly.

**Easy to Raise—Big Demand** No special knowledge, experience or equipment needed.

**Large Profits** They breed the year round—are very prolific—require but little space or attention. Pay better than poultry or rabbits—cost less to house, feed, keep, easier raised—less trouble, market guaranteed.

Particulars, contract, and booklet how to raise **FREE** **CAVIES DISTRIBUTING COMPANY** 3145 Grand Avenue, Kansas City, Mo. Largest Guinea Pig breeders and distributors in America.



## "For Lovers of Art Needle Work" The Wonder Embroidery Needle

It is easy to embroider the **AUTOBROIDER** WAY. So simple a Child Can Operate It.

**THIS WONDERFUL NEW INVENTION** enables you to do the most beautiful hand embroidery in very short time, and so easily that no skill is needed.

Makes all stitches alike and is self-feeding. You can embroider Dresses, Scarfs, Pillow Tops, Center Pieces, Children's Clothes, in fact, everything that should be embroidered.

Ten times as fast and at half the cost of the old way. You can also make beautiful velvet-effect rugs. The most "**HUMAN NEEDLE**" ever produced to be worked by hand.

Price of Needle complete with instructions, skein of yarn, pillow top and back for \$1.50 prepaid.

Send Money Order, Check, or Currency in place of stamps when possible.

N. O. FULLER

MEDINA, OHIO

**JOHN G. PATON**  
Telephone: Barelay  
5581, 5582, 5583

**CABLE ADDRESS**  
**PATCOHONEY**  
New York

**GEORGE R. COWELL**  
Codes: Bentleys  
Western Union  
A. B. C. Fifth Edition

**PATON & COWELL**  
217 Broadway, New York  
**COMMISSION MERCHANTS**

Wholesale Dealers in all Varieties of  
**PURE HONEY**  
IMPORTED AND DOMESTIC

If you have Honey for sale, send us samples and your asking prices.  
If you want to buy Honey, write or wire us for prices and samples.

REFERENCES: THE AMERICAN EXCHANGE NATIONAL  
BANK, New York, or your own Bank.



**PATON & COWELL**  
217 BROADWAY  
NEW YORK



Made right.



Priced under favorable manufacturing conditions.

# Cypress Bee Supplies

On account of being in the cypress belt and having extremely low operating expenses we are able to offer you the supplies made of the finest soft cypress obtainable, which is almost as soft and light as white pine.

Hives are standard dimensions, dovetailed, hand holds on all four sides, supplied with rabbets, nails, and Hoffman frames. Prices include cover, bottom, body, and frames.

A full line of Root's supplies and Aircro Foundation kept in stock. Let us quote you on your 1921 requirements in either Root's or our goods.

8-frame 1-story hives complete in lots of 5.....\$14.75

10-frame 1-story hives complete in lots of 5..... 16.00

Above supplied with Root-Hoffman frames at \$1.50 extra for 5 8-frame, and \$1.85 for 5 10-frame.

## Hive Bodies.

Eight-frame .....\$0.95 each

Ten-frame ..... 1.05 each

Bottom-boards are made of  $\frac{7}{8}$ -inch lumber throughout. Floor is tongued and grooved together, reversible, of standard dimensions and construction.

Price:

8-frame in lots of 5.....\$0.75

10-frame in lots of 5..... .80

## Prices of Bees.

Untested queens: 1, \$2.00; 12 or more, 1.50 each. Tested queens, \$3.00.

1-lb. package without queen.....\$4.00

2-lb. package without queen..... 6.75

2-frame nuclei ..... 7.00

8-frame colony ..... 20.00

10-frame colony ..... 22.00

1 carload bees in 8-frame cypress hives for shipment in spring from Helena, Ga., at \$12.50 each.

## Covers.

All covers are flat and reversible. Both one and two piece are the same in every respect, except the one-piece is made from wide clear boards and the two-piece is joined with metal. Cypress covers do not warp.

8-frame two-piece .....\$0.70

10-frame two-piece ..... .75

8-frame one-piece ..... .85

10-frame one-piece ..... 1.00

Absolutely the best cover made.

Fresh stock foundation shipped from factory direct to you at wholesale prices in lots of 50 pounds or more.

SEND FOR CATALOGUE.

# The Stover Apiaries

Helena, Ga.

Mayhew, Miss.

March is here, and we begin to see visions of our bees flying here and there. Are we going to have our supplies ready, for the busy little workers? They will do their part in bringing in the honey if we do ours.

Don't leave it too late before ordering. Now is the time. Send us your order now, and we will ship at once. Have you veils, smokers, hive-tools, and other appliances on hand?

# B READY FOR THE B's

**F. A. SALISBURY**

1631 W. Genesee Street  
SYRACUSE, NEW YORK

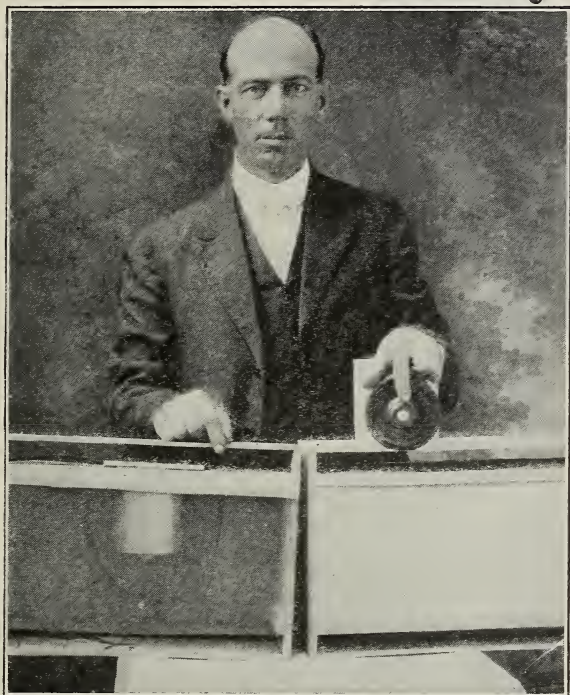
New York State Beekeepers,  
Send for our catalog.

The prophets tell us we are to have an early Spring. This means you will want your supplies on hand. Swarming time will soon be here. Take our advice. Order now.

Why delay, and regret it? Send in your order; then put your hands in your pockets and say to your neighbor, "Well, I'm prepared, are you?"



# THE AULT 1921 BEE SHIPPING CAGE



## Patent Pending

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3rd. Feeders are made more substantial, 1-3 larger, and have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th. The Cage is one piece screen wire protected by thin boards on the outside. Send for free circular describing the cage in detail, prices, etc.

## Queens—Package Bees—Queens

Will book your order with 20 per cent down, balance just before shipping. My Free Circular gives prices in detail, etc. Safe delivery Guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1-pound package bees, \$3.00 each, 25 or more \$2.85 each.

2-pound package bees, \$5.00 each, 25 or more \$4.75 each.

3-pound package bees, \$7.00 each, 25 or more \$6.65 each.

F. O. B. Shipping Point. Add price of queen wanted.

1 Untested Queen, \$2.00 each; 25 or more, \$1.75 each

1 Select Unt. Queen, \$2.25 each; 25 or more, \$2.00 each

1 Tested Queen, \$3.00 each; 25 or more, \$2.70 each

1 Select Tested, \$3.50 each; 25 or more, \$3.00 each

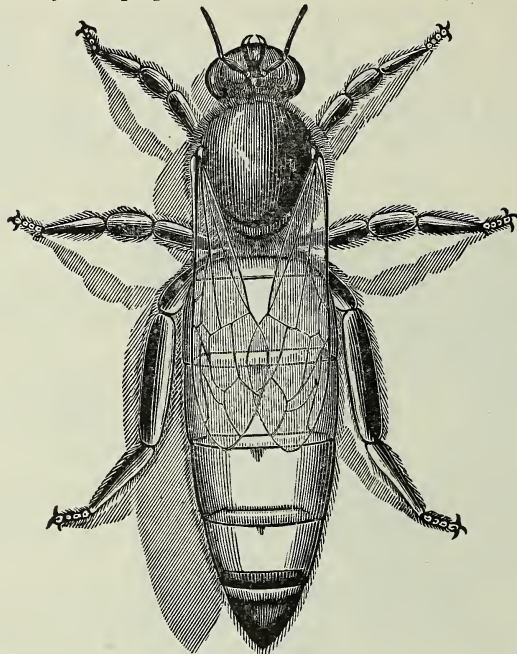
# Nueces County Apiaries

E. B. AULT, Prop.

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Calallen, Texas

My first peep out on the dawn of a new year.



Highest Quality      Prompt Service      Satisfaction  
**The Reliable Three - Banded Italian Queens**

We are now booking orders for 1921. Queens will be ready after May 15th, one-fourth down, balance just before shipping date. Place your orders early, as we fill orders in rotation.

**WHY ORDER FARMER QUEENS?**

They are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be, and we positively guarantee that no better can be reared; we spare neither labor nor money in developing our strain of Italians. It is our intention to improve our original stock each year and to be more skillful queen-breeders. Our first original stock was procured from the highest quality obtainable, which we have proved to the highest point and is now not surpassed by any. Our own eyes inspect every queen that leaves our yards; no culls sent out. Place your orders, and after you have given our queens a fair test and you are not satisfied in every way that they are as good as any you have ever used, just return them and we will send you queens to take their places or return your money. They are very resistant to diseases, the very best for honey-gathering. You take no risk in buying our queens; safe arrival in U. S. A. and Canada; satisfaction is left entirely to purchaser; prompt service given to all orders; every queen guaranteed to be purely mated.

Our Prices:	1	6	12	100
Untested .....	\$1.50	\$ 8.00	\$15.00	\$100.00
Select Untested .....	1.75	9.50	17.00	120.00
Tested .....	3.00	14.75	25.00	
Select Tested .....	4.00	23.00	42.00	

Write for prices on larger quantities than 100.

**The Farmer Apiaries - - Ramer, Alabama**  
 Where the good queens come from.



# Airco

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# Foundation

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Use it this year.  
We want YOU to be the judge.

---

The A. I. Root Company  
Medina, Ohio

For your convenience, prompt service and saving on carriers' charges you can address The A. I. Root Co., at any of the following points where Airco Foundation is always in stock:

Chicago, 224 W. Huron St.  
St. Paul, 290 E. Sixth St.  
Indianapolis, 873 Massachusetts Ave.  
Council Bluffs, Iowa.  
San Antonio, P. O. Box 765.  
Los Angeles, 1824 E. 15th St.

San Francisco, 52-54 Main St.  
New Orleans, 224 Poydras St.  
New York, 23 Leonard St.  
Philadelphia, 8-10 Vine St.  
Norfolk, 10 Commerce St.  
Syracuse, 1631 W. Genessee St.

Agencies all over the country.

# Uncle Sam on Comb Honey

UNITED STATES DEPARTMENT OF AGRICULTURE  
Bureau of Markets  
Semi-Monthly Report

Washington, D. C.  
January 17, 1921.

1358 B Street, S. W.,  
Telephone-Main 4650, Br. 212.

HONEY - NO. 64.

**BOSTON:** (Jan. 15): 1 car Porto Rico via New York City arrived since last report. Comb honey movement slow but is steady because of light supply, which is all in hands of dealers.

**CINCINNATI:** (Jan. 15): Receipts light. With no carlot arrivals reported.  
**COMB:** Supplies light. Demand moderate, market steady, prices holding firm.

**MINNEAPOLIS:** (Jan. 17): Extracted supplies moderate. Demand and movement slow, market weaker.

**COMB:** Although demand and movement is slow, market is firm because supplies very light.

**BOSTON:** Since last report, 45 barrels Porto Rico arrived. Market unsettled for extracted stock account declining sugar and syrup market.

**CHICAGO:** Car Colo., car Calif., car Minn. arrived. Very slow demand and movement, market weak and lower prices are generally anticipated on extracted, but it is believed comb prices will hold up pretty well.

**MINNEAPOLIS:** Supplies light. Dealers continuing to buy only for immediate needs. Market weaker on extracted, but steady on comb.

This proves comb honey is your best bet.  
Get first grade prices with Lewis Sections.  
See a 1921 "Beeware" Catalog. Write  
today. Ask us for your distributor's name.  
It's free.

LOOK  
FOR



THIS  
MARK

"Beeware" is a Registered Trademark.

## G. B. Lewis Company

Home Office and Works: Watertown, Wisconsin.

Branches: Albany, N. Y., Memphis, Tenn., Lawyers (Near Lynchburg), Va.